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EIGHTH ANNUAL REPORT

PROCEEDINGS

Oregon State Horticultural Society

THIRTY-FIRST ANNUAL MEETING

HOOD RIVER, OREGON
December 11, 12, 13, 1916

STATE OF OREGON
1859

EIGHTH ANNUAL REPORT

PROCEEDINGS

OF THE

THIRTY-FIRST ANNUAL MEETING

OF THE

OREGON STATE HORTICULTURAL SOCIETY

HELD DECEMBER 11, 12, 13, 1916
HOOD RIVER, OREGON

ORGANIZED 1885
INCORPORATED 1909

SALEM, OREGON
THE PACIFIC HOMESTEAD
1917

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OREGON STATE HORTICULTURAL SOCIETY

Officers

Robert C. Paulus, President, Salem
Dr. C. H. Bailey, Vice-President, Roseburg
C. D. Minton, Secretary-Treasurer, Portland

Board of Trustees

Albert Brownell, One Year, Portland
Chas. McNary, Two Years, Salem
A. P. Bateham, Three Years, Portland

Auditing Committee

Albert Brownell
C. A. Burt
J. B. Pilkington

Committee on Needed Legislation

A. P. Bateham, Chairman, Portland
Chas. McNary, Salem
L. T. Reynolds, Salem
Dr. C. A. Macrum, Mosier
M. McDonald, Orenco

Honorary Members

Atwell, H. C. (1911), Forest Grove
Cardwell, Dr. J. R.* (1897), Oregonian Bldg., Portland
Dosch, Henry E. (1911), Hillsdale, Portland
Lake, E. R. (1892), Pomological Dept., Washington, D. C.
Lambert, J. H.* (1895), Portland
Luelling, Seth* (1895), Milwaukie
Miller, H. B. (1911), 509 E. 21st St. N., Portland
Smith, E. L. (1911), Hood River
Starr, James E.* (1893), Portland

*Deceased.

Life Members

Anderson, Nils P., McMinnville
Armstrong, E. C., Salem
Bateham, A. P., Portland
Better Fruits Pub. Co., E. H. Shepard, Hood River
Bridge Horticultural Society, Bridge, Coos County
Brownell, Albert, Exchange Bldg., Third and Yamhill, Portland
Brumfield, J. T., Portland
Bryant, Hub., Albany
Carter, J. L., Hood River
Central Horticultural Society, Coquille
Chase, W. E., West Ave. and E. Burnside, Mt. Tabor, Portland
Clark, L. E., Hood River
Coos Bay Fruit Growers' Association, Marshfield
Cordley, A. B., Dean, O. A. C., Corvallis
Daugherty, Otis Ray, R. F. D. No. 1, Molalla
Davidson, Frank L., Hood River
Davidson, P. S., Hood River
Eggert, Mrs. Fred'k, 265 14th St., Portland
Esterly, H. M., Yeon Bldg., Portland
Fanning, A. M., Sheridan
Fargo, G. K., 83 Fifth St., Portland
Forbis, John F., Dilley
Goodrich, A. C.,* Yamhill
Groner, Ferdinand, R. F. D. No. 2, Hillsboro
Holaday, Asa, Scappoose
Holt, J. O., Mgr., Eugene Fruit Growers' Association, Eugene
Howe, Ed L., Multnomah Hotel, Portland
Laidlaw, W. A., 1515 Belmont St., Portland
McCargar, C. A., Yeon Bldg., Portland
McDonald, M., Oregon Nursery Company, Orenco.
McGill, A., Beck Bldg., Portland
Macrum, C. A., care of Portland Hotel, Portland
Mason, Julius L., Hood River

Meier, Julius L., care Meier & Frank, Portland
Minton, C. D., Portland
Moulton, L. D., McMinnville
Myrtle Point Horticultural Society, Myrtle Point
Newell, W. K., Gaston
Park, Chas. A., Salem
Pemberton, Jno., Salem
Pilkington, J. B., Portland
Power, Frank W., Oregon Nursery Co., Orenco
*Deceased, 1916.
Rees, J. H., Springbrook
Reynolds, L. T., Salem
Roberts, E. C., Lebanon
Rumbaugh, H. G., Albany
Settlemeier, Frank W., Woodburn
*Deceased, 1914.
Swallow, C. W., R. D. No. 3, 118, Oregon City
Wallace, F. W., McMinnville
Weber, R. H., The Dalles
Westerlund, J. A., Medford
Williamson, H. M., Sec'y State Board of Horticulture, 303 Henry Bldg., Portland
Williamson, W. E., Portland

Annual Members, 1917

Amoth, H. L., Newberg
Allen, A. C., Medford
Bailey, C. H., Roseburg
Bachelder, J. F., Portland
Brown, G. G., Hood River
Brownlee, E. C., Hood River
Bachman, E. L., Dee
Barss, Prof. H. P., Corvallis
Clymers, L. E., Eugene
Castner, G. R., Hood River
Carnes, W. L., Hood River
Currie, C. J., Monroe
Cooley, S. D., Roseburg
Clark, H. H., Central Point
Childs, Prof. Leroy, Hood River
Dearborn, G. A., Dundee
Deming & Co., Salem, Ohio
Decker, T. A., Hood River
Ewing, R. M., Dallas
Emmett, W. M., Dee
Frazier, D. M., 6907 32nd N. W., Seattle, Wash.
Frazier, Mrs. D. M., 6907 32nd N. W., Seattle, Wash.
Gardner, Prof. R. V., Corvallis
Galligan, C. F., Dufur
Graham, S. C., White Salmon
Gardner, Col. Cornelius, 740 Sherwood Drive, Portland
Herbert, Mrs. S. Melaine, Medford
Hollis, F. W., Medford
Hopkins, F. H., Central Point
Hoyt, C. D., Route 1, Hood River
Harris, R. A., Portland
Himes, Geo. H., Portland
Jessup, I. M., Cooks, Wash.
Leis, B., Beaverton
Malbrouf, C. A., Portland
Minton, C. B., Dee
Magnes, Prof. J. R., Corvallis
McClure, D. D., 724 N. W. Bank Bldg., Portland
McClaine, J. F., Hood River
Marsh, Geo., Lookinglass
McNary, Judge C. L., Salem
Norton, Frank J., Sutherlin
Paulus, R. C., Salem
Purdy, Edna D., Albany
Parsons, Regnald H., Seattle
Porter, J. C., Hood River
Pomeroy, J. W., Scappoose
Querry, H. F., Medford
Seaquest, A. L., Portland
Smith, W. G., Wolf Creek
Sinsel, C. I., Boise, Idaho
Snyder, A., Dayton
Stokes, Wm. R., Portland
Scott, John H., Portland
Slade, J. E., Hood River
Stockwell, Robt. C., Boyd
West, C. W., Dee
Weed, Howard Everett, Beaverton

Delinquent Members, 1917

Allen, Prof. R. W., Hermiston
Bohrnsteadt, A. C., Salem
Clark, W. D., Central Point
Carlton, Edwin W., Medford
Chase, A. C., Cresswell
Chase, F. B., Eugene
Dreier, W. C., Rio Piedras, Porto Rico
Fisher, Fred, Roseburg
Funk, H. G., Sheridan
Hall, Joseph, Newberg
Hurd, G. S., Stanfield
Hollis, F. W., Medford
Jessup, J. M., Cooks, Wash.
Johnson, B. W., Corvallis
Jorgensen N. C., Salem, R D. 9
Lewis, Prof. C. I., Corvallis
Merriman, C. A., Eugene
Otis, L. S., Newberg
Reimers, F. C., Talent
Rumbaugh, D. W., Albany
Scarborough, L. D., Eugene
Sibson, Wm. S., Portland
Stout, M. A., Sheridan
Stout, E. C., Sheridan
Strong, Fred, Roseburg
Stokes, Wm. R., Portland
Witherspoon, H. A., Elgin

Delinquent Members, 1916-17

Anderson, Bert, Medford
Ashpole, Wig, Medford
Ambercrombie, A. W., Medford
Ahren, W. M., Medford
Aitkins, H. S., Medford
Alford, W. L., Medford
Bardwell, Ralph, Medford
Bennett, N. S., Medford
Burkett, J. F., Grants Pass
Bleckner, W. L., Grants Pass
Barnhill, O. H., Ashland
Bagley, W. R., Talent

Brayton, W. E., Central Point
Brown, S. L., Medford
Brown, Ed., Medford
Beliling, H. C., Medford
Bennett, A. D., Medford
Chase M. C., Central Point
Campbell, J. P., Jacksonville, Florida
Carpenter, Geo. B., Medford
Clark, H. H., Central Point
Carpenter, Alfred S. V., Medford
Cooley, J. H., Medford
Crawford, Oris, Medford
Crego, R. E., Union Meat Co., Portland
Conner, Guy W., Medford
Corey, C. H., Medford
Colvig, Wm., Medford
Deuel, H. L. D., Medford
Deuel, F. K., Medford
Doth, John, Medford
Davidson, D. L., Medford
Dinsmore, James, 1997 Orchard St., Eugene
Darby, Charles, R. F. D., Medford
Dunlap, A. J., Central Point
Doherty, B. A., Talent
Dorris, Geo. A., Springfield
Dean, A. H., Rex
Daniels, T. E., Medford
Diamond, J. W., Medford
Diamond, Fay E., Medford
Ewing, Margaret, Medford
Ewing, R. L., Medford
Elliott, T. C., Medford
Eisman, F. D., Grants Pass
Englehardt, Prof. C. E., Medford
Elmer, W. J., R. F. D. 4, Medford
Fifer, F. A., Medford
Foster, R. N., Medford
French, Lillian, Medford
Fuselman, J. E., Medford
Fengwald, C. Y., Medford
Fiers, A. Corno, Central Point
Gore, Wm. H., Medford
Gates, Geo. A., Medford
Gates, C. E., Medford
Griswold, W. H., Coast Culvert & Flume Co., Portland
Gregg, O. I., Medford
Gale, H. E., Merlin
Garnett, H. C., Medford
Hilton, George, R. F. D. 2, Medford
Henderson, Dr. M. P., Medford
Himes, George H., 207 2d St., Portland
Hyatt, F. G., Medford
Herd, C. C., 521 E. 40th N., Portland
Hale, J. F., Medford
Howe, Richard, Medford
Howard, H. D., Medford
Hubbard, A. C., Medford
Hubbard, F., Medford
Hargreaves, Dr. H. C., Medford
Johnson, J. G., 43 West St., Portland, Maine
Johnson, J. B., Medford
Johnson, John, Medford
Joy, B. F., Medford
Keene, Dr. J. M., Medford
Kidd, C. M., Medford
Klum, B. K., Medford
Knight, C. A., Medford
Lamport, E. H., Medford
Lawrence, John T., Medford
Layre, C. J., Medford
Letta, H. A., Medford
Lippincott, J. B. Co., Philadelphia, Pa.
Lowe, D. M., Ashland
Lowry, Bert B., Medford
Mann, J. C., Medford
Marienney, C. L., Medford
McGowan, W. H., Medford
Moler, Emil, Medford
McDonald, C. W., Medford
McBride, H. D., Medford
Merrick, F. E., Medford
Miller, Maude, Medford
McCormick, A. C., Lebanon
Miksche, Leo J., Medford
Morgan, Wm., Medford
Morrison, E. M., Medford
Moss, H. M., Medford
Noe, C. F., Medford
Niles, Clyde E., Grants Pass
Norris, M. J., Medford
Nicholson, H. G., Medford
Pankey, C. B., Central Point
Paxson, R. H., Central Point
Putman, George, Medford
Perry, J. A., Medford
Palmer, E. N., Central Point
Powers, Prof. W. L., O. A. C., Corvallis
Juerry, H. F., Medford
Robinson, C. L., Forest Grove
Roberts, R. A., Lebanon
Richardson, S. T., Medford
Reicker, Elizabeth, Medford
Stokes, W. R., 453 Prescott St., Portland
Scott, John M., G. P. A., S. P., Portland
Shrock, Claude, Sutherlin
Sommerville, J. T., Medford
Sullivan, J. T., Medford
Schfidt, E. F., Medford
Scheffelin, Chas. S., Medford
Strong, Charles, Medford
Swern, P. M., Medford
Sumner, W. A., Medford
Stone, D. W., Medford
Snider, J. W., Medford
Springer, W., Medford
Sloam, H. W., Florence
Thomas, C. M., Talent
Thorne, F. W., Medford
Ticley, G. L., Medford
Uhlrich, Wm., Medford
Vater, W. L., Medford
Vater, Vernon, Medford
Vilas, J. F., Medford
Warner, Edna, Medford
Wilkinson, John J., Medford
Waters, R. W., Medford
Warner, Ed., Medford
Wortman, H. G., Medford
Wold, Jonas, Medford
Wood, D. R., Medford
Wood, H., Grants Pass
Wood, Douglas, Medford
Yost, Gus L., Medford

AMENDED ARTICLES OF INCORPORATION

of the

OREGON HORTICULTURAL SOCIETY

Know All Men by These Presents: That we, the undersigned, Homer C. Atwell, of the county of Washington; Frank W. Power, of the county of Multnomah, and James R. Shepard, of the county of Polk, all in the state of Oregon, being officers of the Oregon State Horticultural Society, unincorporated, and having been duly elected to the respective offices hereinafter specified, in accordance with the usages and regulations of said Society, do hereby associate ourselves together for the purpose of incorporation, under and by virtue of the general corporation laws of the state of Oregon, relative to religious, literary, benevolent, charitable and similar societies; and we do make, subscribe and adopt, in triplicate, these articles of incorporation, to-wit:

1. The name assumed by this corporation, and by which name it shall be known, is Oregon State Horticultural Society; and its duration shall be unlimited.

2. The object, business and pursuit of this corporation is, and shall be, as follows: (1) The development of agricultural and especially of those branches known as horticulture, floriculture, arboriculture, and forestry; (2) the development of landscape gardening, and of all arts, sciences and instrumentalities likely to elevate the character of the rural population and increase the profits, comforts and pleasures of rural life; (3) the collection, preservation and dissemination of knowledge relative to the foregoing and other kindred subjects; (4) the exploitation and development of all agencies tending to conserve the natural resources of the country, and to arouse the public to an interest in such conservations; (5) to acquire, own, hold, use, sell, and otherwise dispose of and convey real and personal property; to accept, receive and use gifts, devices, legacies, bequests, and legislative appropriations; to borrow money, and execute therefor its promissory notes, mortgages, and other assurances; (6) to do any and all other acts and things which may be necessary, advisable or convenient, for the purpose of more effectually accomplishing the purposes aforesaid, or any of them.

3. The estimated value of the property and money possessed by said Society at this time is one hundred dollars; and the sources of its revenue or income is, and will be, dues of its members, subscriptions, donations, devises, legacies, bequests and legislative appropriations, and any income which may be derived from the investment or use of any moneys or property so acquired.

4. The respective titles of the officers making these articles are as follows: Homer C. Atwell, president; Frank W. Power, secretary-treasurer, and James R. Shepard, vice-president. They shall hold their respective offices until their successors therein shall be duly elected and qualified. Their successors in office shall be elected by a majority vote of the members of said Oregon State Horticultural Society who are in good standing and present, and voting, at an annual meeting of said society on the first Tuesday of December, 1909; and on such other day and month of each succeeding year thereafter as may be designated in

the by-laws of said society as the date of its annual meeting, said annual meetings to be held in the city of Portland, Oregon.

5. The location of said Society shall be in said city of Portland, in the county of Multnomah, and state of Oregon.

HOMER C. ATWELL, President,
J. R. SHEPARD, Vice-President,
FRANK W. POWER, Secretary-Treasurer.

We, the undersigned, A. P. Bateham, President; E. H. Shepard, Vice-President, and Frank W. Power, Secretary-Treasurer of the Oregon State Horticultural Society, certify that at the annual meeting of the Society held November 16, 1911, the following resolution was unanimously adopted:

Resolved, That the officers take the necessary steps to file amended Articles of Incorporation placing the legal powers of the Society in the officers and three trustees, in place of the officers alone, as at present.

In accordance with said resolution the following to be known as Section 6 in the Articles of Incorporation will be appended as the amendment thereto:

"Section 6. The management of the affairs of the Society shall be vested in the president, vice-president and secretary-treasurer and three trustees. They shall be elected at the annual meeting each year, which shall be held at such time as may from time to time be fixed by the by-laws. The officers and trustees shall hold office for such time as provided from time to time in the by-laws."

Signed in triplicate and sealed with the seal of the Society this fifteenth day of October, 1912.

A. P. BATEHAM, President,
E. H. SHEPARD, Vice-President,
FRANK W. POWER, Secretary-Treasurer.

Acknowledged before Notary Public.

AMENDED BY-LAWS OF THE OREGON STATE HORTICULTURAL SOCIETY.

(Adopted November 20, 1912)

ARTICLE I—THE SOCIETY YEAR

The Society year shall begin on the first day of January.

ARTICLE II—MEMBERSHIP

Section 1. The membership of the Society shall consist of annual, life and honorary members.

Section 2. Any person who shall pay the annual membership fee of one dollar shall thereby become a member for the current year, ending with the opening of the next annual meeting.

Section 3. Any person who shall pay the life membership fee of ten dollars shall thereby become a life member and shall be excused from further payment of membership fees.

Section 4. Any person who in the opinion of the Society has done the society or horticulture in general some especially valuable service may be elected to honorary membership by a two-thirds vote of the members present at any regular meeting and shall be excused from payment of all membership fees.

Section 5. Those who were honorary members before the incorporation of this Society shall continue to be considered honorary members, without further action of the Society.

Section 6. All members shall be entitled to the same rights and privileges.

ARTICLE III—OFFICERS

Section 1. The officers of this Society shall be a president, a vice-president, and a secretary-treasurer and three trustees. The last four shall be under bond in such sum as the Society may designate for the faithful discharge of his duties.

Section 2. The president and secretary shall be ex-officio members of all committees, except the auditing committees.

Section 3. The duties of said officers shall be such as usually devolve upon like officers, in similar organizations; provided, that no bills shall be paid without the approval in writing of the president and secretary; and provided further, that a committee of three, to be chosen annually by the Society, shall audit all bills, reports and accounts and render a report thereon to the Society.

Section 4. The secretary shall, at each annaul meeting, render a report showing:

First—The personal property of the Society in his hands.

Second—The irreducible funds, securities and bills receivable belonging to the Society, stating how such funds are invested, and the interest then accrued on the same and on the other securities and bills receivable. Said report shall cover all documents of permanent value or use.

Third—He each year shall render to the auditing committee a complete report of the cash recipts and disbursements for the preceding year and this report, together with the report of the auditing committee, shall be made a part of the proceedings and printed in the annual report.

Fourth—The premiums offered, and by whom offered, and what was the final disposition of same.

Section 5. The three trustees appointed by the governor as a Board of Control of the state, appropriation, together with the president and secretary of the Society, shall constitute an executive committee, which committee shall be empowered to transact any and all business of the Society that may be necessary between meetings of this Society.

The executive committee shall from time to time fix the compensation of the secretary of this Society as they may deem the requirements of the office may justify.

ARTICLE IV—DATE OF ANNUAL MEETING

The annual meeting shall be held on such days in November or December of each year as the officers may, from year to year, designate. The officers shall be elected on the afternoon of the second day of the annual meeting. The president, vice-president and secretary-treasurer shall take charge of their office on the first day of January next following their election and hold office for one year, or until their successors are elected and qualified.

The trustees shall be chosen in accordance with the Act of Legislature so long as an appropriation is given by the state, and unless otherwise provided therein shall hold office for three years. In case the legislature shall fail to grant an appropriation in any year, the trustees shall be elected for three years by the Society.

ARTICLE V—OTHER MEETINGS

Section 1. Other meetings may be held at such times and places as the Society by vote at a previous meeting may designate.

Section 2. The president may call a special meeting at Portland by causing notice thereof to be mailed to each member at least five days previous thereto, such notice to state the object of such meeting.

Section 3. It shall be the duty of the president to call a special meeting whenever requested in writing so to do by fifteen or more members.

ARTICLE VI—PUBLICATIONS

Every member shall be entitled, without cost, to one copy of all official reports published by the Society.

ARTICLE VII—QUORUM

Nine members shall constitute a quorum for the transaction of business, but a less number may meet, call to order, and adjourn from time to time.

ARTICLE VIII—ORDER OF BUSINESS

The following order shall be observed as a guide in the transaction of business at the annual meeting of the Society:

1. Call to order and reading of minutes of previous meeting.
2. Reports of officers.
3. Reports of committees.
4. Unfinished business.

5. New business.
6. Election of officers.
7. Papers, addresses, etc.

ARTICLE IX—RULES OF PRACTICE

Roberts' Rules of Order shall govern the deliberations of the Society.

ARTICLE X—IRREDUCIBLE FUND

All life membership fees, together with the sum of $2,000.00 of the amount heretofore realized from the bequest of the late Cyrus E. Hoskins, the "Lambert Fund," and the "Cardwell Fund," shall be kept intact and invested on good security, so as to produce a revenue, if possible, and only said revenue shall be expended by the Society.

ARTICLE XI—PERSONAL PROPERTY

The secretary shall be the custodian of all badges, banners, dies, medals, blanks, books and other property of the Society of value or suitable for future use; and shall exact from his successor an itemized receipt for said property, when same is transferred.

ARTICLE XII—RECORD OF REPORTS

The annual reports of the officers and of the auditing committee and all reports relative to the finances, or property of the Society, or the disbursements of its funds, shall appear in full in the record of transactions, in the order of their filing with the secretary following the record of the meetings at which the reports were presented. The treasurer's report shall be made to the auditing committee showing a full report of receipts and disbursements and said report together with report of the auditing committee shall be made a part of the proceedings.

Said reports may either be pasted upon said record, or copied, in which latter case the copy shall be attested by the secretary.

ARTICLE XIII.

The executive committee may, if they deem it advisable, lend the assistance of the Society in any display of fruits and products of the state.

ARTICLE XIV—AMENDMENTS

New by-laws may be adopted and old ones changed or repealed by a two-thirds vote of the members present at any meeting; provided, notice of such proposed adoption, change or repeal shall have been given at the last previous meeting of the Society; and provided, further, that a vote to change or repeal Artice X shall be by yeas and nays, recorded on the record book of the Society. Said vote shall be taken only at an annual meeting, and after due notice given at the annual meeting next preceding the same.

SECRETARY'S REPORT.

To the Officers and Members of the Oregon State Horticultural Society: I wish to submit to you my annual report of the society. As you know our appropriation was removed by the last legislature and we were compelled to print our proceedings from our own funds. This has somewhat lessened this amount over a year ago but only a few dollars as the income of the Society has nearly taken care of this additional expense. As we are in the same condition this year it is desirable that we secure as many members at this meeting as possible and that many who are now annual members become life members that the society may have a dependable balance always on hand.

In this connection this society should instruct its legislative committee to again have the printing appropriation restored at this coming legislature.

There is another matter of legislation that should be acted upon by this body and that is a demurrage charge to be collected by the shipper of perishable freight when cars are not supplied within a given period after the order is placed as well as a payment of demurrage by the shipped who holds a car beyond the time limit.

There is now on hand in the general fund $1043.30. This amount will shortly be increased by interest of $138 and also interest from the savings fund of $16.14 and membership fees. I would recommend that the minutes be again printed at the expense of the society and be distributed again at the legislature. Again I wish to bring before this body the advisability of loaning probably $1000 or more upon good security, of the available funds of the society which are not now bearing interest or at least only a small amount of interest.

There are a number of 1915 reports still available which may be had by members upon request.

The program this year we believe is full of interest and any thing that may be lacking in it should be charged up to the "war" and the car shortage, for I am sure had these things been out of the way your secretary would have had more time to attend to the program and those who responded would have done so more promptly. And as I walk along your streets and the delicious aroma of your peerless apples greet me I know that you too have had your busy days.

Respectfully submitted.

C. D. MINTON.

FINANCIAL REPORT.

Irreducible Funds.

Lambert Fund	$ 100.00	
Hoskin Fund	2,000.00	
Cardwell Fund	218.50	
Life Membership Fund	525.00	
		$2,843.50
Above invested as follows:		
Mortgage W. K. Newell, 6 per cent	$2,300.00	
Note J. R. Cardwell, 6 per cent	50.00	
Ladd & Tilton Savings Bank, 3½ per cent	493.50	
		$2,843.50

General Fund Receipts.

Balance on hand last report	$1,280.95	
Interest on savings for 1916	16.14	
Interest W. K. Newell	138.00	
Membership, 1917	48.00	
		$1,483.09

Disbursements.

Portland Trust Company, for safety deposit box	$ 10.00	
Hartman & Thompson, bond for Secretary	7.50	
Oregon Multigraph Co., printing letters	3.50	
J. R. Hamilton, printing	7.50	
Metropolitan Printing Co., printing	4.25	
Metropolitan Printing Co., printing	184.15	
C. D. Minton, proof-reading, compiling and mailing minutes	35.75	
Carl Reuf, flowers for funeral of Frank W. Powers	3.00	
		$ 255.65
Balance		$1,227.44

Trial Balance of Oregon State Horticultural Society for the year 1916:

Cash on hands	$1,227.44	
Loss and Gain		$1,236.79
Lambert Fund		100.00
Hoskin Fund		2,000.00
Cardwell Fund		218.50
Life Memberships		525.00
Mortgage	2,300.00	
Savings, Ladd & Tilton	493.50	
Supplies	9.35	
Bills Receivable	50.00	
	$4,080.29	$4,080.29

We, your committee, duly appointed to audit the books and accounts of Mr. C. D. Minton, the Secretary-Treasurer of the Oregon State Horticultural Society, hereby certify that we have this day carefully examined all books and records submitted to us and find the same in order in every respect covering the year ending Dec. 31, 1916.

We also certify that the cash on hand, as shown by the Trial Balance, is on deposit with the Ladd & Tilton Bank.

ALBERT BROWNELL, Chairman,
E. A. BURT,
J. B. PILKINGTON.

Dated Portland, Oregon, January 25, 1917.

Report of Meeting

MONDAY, DECEMBER 11, 1916

Meeting called to order at 1:30 p. m. by Secretary C. D. Minton.

President Washburn being absent, J. L. Carter was elected as temporary chairman.

The Chairman: Mr. Secretary and Gentlemen, I understand that there was no session held this morning and so I presume that we will take up the work of the morning session. We will commence at the first of the program and simply proceed with it. First is the welcome by the mayor of the town, Dr. H. L. Dumble.

Dr. Dumble: I will say that I am not a public speaker, I am just a plain farmer and doctor and mayor. Unfortunately in my bunch of acquirements I have never succeeded in making very much of a talker, but I will say in behalf of the people of Hood River that I will extend you a very cordial welcome. We think it very appropriate that you should meet in what we consider the best horticultural section in Oregon. That may be conceit, but we feel that way about it. I am not a real farmer, I am a roller top desk farmer, but I do like to hobnob with real farmers and learn something about farming. Fifty or sixty years ago each farmer ran his farm to suit himself. Today you are meeting here to exchange ideas. Each man gets the benefit of the other man's thought, the benefit of the other man's experiments and as a result we have raised farming from the low plane that it occupied many years ago to a plane that equals all other occupations and businesses; and it comes from the fact that farmers are farming with their heads instead of in the old fashioned way. We have learned that we have got to put in a perfect pack and say "This is square goods." Until we get to the point where we are going to do that, we are never going to make a perfect success of the apple business in Hood River, any more than a man can make a perfect success of any business if he isn't honest, open and above board. Now, then as you are going to have a lot of interesting papers read, I will say nothing more, but I do give you a hearty welcome to our city. I thank you.

The Chairman: Unfortunately the man who was to preside here this afternoon, President Washburn, is not with us. Of course the response to this address of welcome would come with a much better grace from someone outside of our circle. We appreciate the address of welcome given to us on the part of the mayor, with him we all agree—those of us who have come from abroad and those of us who are residents of the town and city of Hood River—that this is an association of no little importance. The horticultural interests in the state of Oregon amount to something; they are becoming more important and amounting to more every day. The litle valley of Hood River has just about closed up its harvest for the year 1916, the most important that it ever had. The most strenuous effort that has ever been put forth in this valley has been put forth this autumn. The harvest has been larger than we expected. It has been a surprise to all, to the associations, to the managers of the apple business of this county and to the growers themselves. There is scarcely a grower in Hood River Valley but has been much surprised at the yield which came from his own orchard. Although he has been in that orchard all summer the thought came to his mind when he began harvesting his crop that he didn't have boxes enough and there was a scramble as it were on the part of the grower to the box factories to get them to produce more boxes and we have had a hard time. Those of us who have had to buy those boxes know what it means. When men would go at 2 o'clock at night and sit in their wagons till the car was opened in the morning you may know it was important. I know of one man who got up at 5 o'clock and went down to the lumber yard to get some boxes and when he got there found five teams before him. Another waited a few minutes to get a cup of coffee and when he got there he found thirteen teams ahead of him and so it has been. I never saw the teams loaded so heavily as they passed by on the road.

This is one of the oldest societies in the state and some of those who began this industry and helped organize this society years ago have passed on to their reward. Others of the older men are still alive, some of them are here. We have with us today that honored old citizen and patron of horticulture, Mr. E. L. Smith. We have with us Mr. Williamson who was a long time connected with the editing of our state agricultural and horticultural paper and has for many years been secretary of the State Board of Horticulture. It will remain for us now to carry out this program as laid down. The next thing in order is the reading of the minutes.

As the minutes of the last meeting had been printed and were to be distributed among the members, on motion the reading was omitted.

Secretary-Treasurer Minton read his report.

A motion was made to accept the report. The motion was carried.

President: During the past year old members of this association have passed to their reward. This afternoon we will take up the memorial concerning the late F. W. Powers, one time secretary of this association. Mr. Homer Atwell, past president of this association, was to respond to this memorial, but he has not been able to come so has prepared a paper and it is in the hands of the secretary. Mr. Minton will now read the paper sent by Mr. Atwell.

FRANK W. POWER

Born January 10, 1869; Died May 22, 1916.

My acquaintance with Frank W. Power began about the time of his election to the secretaryship of this society in the year 1907, he having succeeded Prof. E. R. Lake in that office. From those longer and more intimately acquainted with Mr. Power I have gathered the following data regarding his life and varied activities:

Mr. Power was born in Kasson, Minn., January 10, 1869, his family subsequently removing, while he was quite young, to California, and thence to Oregon. He was graduated from Albany college, in this state in 1887, and soon afterwards admitted to the bar, although he never practiced law. During the years 1888, 1889, 1890 and 1891, he was engaged in title abstract work in Bellingham, Washington. Returning to Oregon, Mr. Power became secretary of the Salem Water Company, with whom he was associated until 1900, with exception of the year 1893, during which he was connected with the Oregon Nursery Company, then located at Salem. From 1900 to 1908 he was again with the Oregon Nursery Company. Mr. Power was for a time interested in a nursery business at Chico, California. From 1908 to 1912 he was engaged in the real estate business in Portland, being also interested in orchard development work in Oregon and Washington. In 1911 he became principal of Pacific Horticultural Correspondence School the work of which he carried on, in addition to his other interests and duties, until the time of his death. In 1912 he became secretary of the Oregon Nursery Company, and established his home at Orenco. This position he continued to hold until his death, which occurred May 22 of the present year. Mr. Power served for six consecutive years as secretary of this society, and was very active in promoting the fruit displays of the society and the Land Products Shows in Portland.

From the foregoing sketch it will be seen that the range of Mr. Power's activities was quite extensive. He was very industrious, and possessed a large capacity for work. Of a studious turn of mind, he took great interest in the study of horticultural subjects, and in the promotion of education along horticultural lines. His church affiliation was Presbyterian, and in politics he was Republican. He was a man of utmost probity, and a valuable citizen. He is survived by a widow, whom he married in 1898, and by two children.

HOMER C. ATWELL.

Chairman: Dr. J. R. Cardwell, as I understand, was the first president of this association, was instrumental in its organization and for many years was enthusiastic in its success. Mr. H. M. Williamson, secretary of the State Board of Horticulture, will present the memorial for Dr. Cardwell.

Mr. Williamson read the paper.

JAMES R. CARDWELL

Born September 11, 1830; Died November 15, 1916.

The Oregon State Horticultural Society must record the loss of its most honored member, Dr. James R. Cardwell, who was its first president, continued to be its president for 22 years, and was thereafter until his death its honored honorary life president.

Dr. Cardwell was born at Springfield, Illinois, September 11, 1830. His parents were descendants of prominent Virginian families; his father was a first cousin of Gen. Robert E. Lee. He grew up in a community of great intellectual activity and ability. In the decade immediately preceding the Civil War, Springfield, Illinois, was more than remarkable for the large number of its citizens who were men of distinguished ability. Among them were Abraham Lincoln and Stephen A. Douglas. Naturally the youth, James A. Cardwell, was stirred with ambition and the desire to acquire a thorough education. His father was unable financially to send him to college, but he did attend for a time Illinois College at Jacksonville, boarding himself, as he has told us, at an expense of 25 cents per week. It was his purpose, however, to gain a degree at Harvard or Yale, and in order to obtain the funds required to attend one of those institutions he began while yet a minor, the practice of dentistry in Springfield. He soon found that he had inherited from his maternal grandparents horticultural tastes, and when not busy in his office he was learning to bud and graft and care for trees and plants. His parents and forefathers had been pioneers of Illinois, Tennessee and Virginia, and there was naurally within him an easily developed pioneering tendency. This tendency was soon developed. His mother's sister, Mrs. Hamilton Campbell, was one of Jason Lee's pioneer band of Methodist missionaries in Oregon. Her letters were enthusiastic in praise of Oregon climate, scenery and productiveness. His uncle, B. R. Biddle, was a California 49er and returned to Illinois by way of Oregon, and saw such great possibilities for the fruit industry here that he asked Dr. Cardwell well to join him in establishing a nursery in Oregon. Dr. Cardwell had heard and read of the success of Henderson Luelling's notable enterprise in bringing a living and growing nursery stock across the plains. His imagination had been fired by this and by the glowing accounts of Oregon given by his aunt and uncle, and he readily accepted at the age of 21 years his uncle's proposition and commenced preparation for the undertaking. In the spring of 1852, at the age of 22 years he started across the plains with a wagon-load of growing trees and plants of the best varieties which could be obtained in Illinois. Five months after starting, and when the promised land was almost in sight, the wagon upset on a steep bank of the Snake River, and the precious load of trees and plants were swept away by the swift current of that river. The shock of disappointment may be imagined. Dr. Cardwell came on to Portalnd and resumed the practice of his profession with offices at Portland and other points in the Willamette Valley. In 1853 he bought a tract of land at Corvallis where he had a branch office, and propagated and planted fruit trees and berries of many kinds and varieties. By 1858 his practice at Portland had grown so that it took up all of his time and he sold his orchard at Corvallis, but soon bought a tract of land a few miles from Portland and in 1860 planted on it an orchard of apples, pears and peaches. For the next 40 years, as the leading dentist of Portland his profession brought him a large income, the greater part of which was expended in buying and clearing land; planting trees; building fruit dryers or evaporators, and making all kinds of horticultural experiments. While this horticultural work and experimentation did not prove profitable to him in a financial way it was of great value to others. The work he did in introducing the industry of producing dried prunes in Oregon hastened by a number of years the development of Oregon's great prune industry.

The loss of money in his fruit-growing undertakings never discouraged Dr. Cardwell. Financial failure stimulated him to undertake something new in his horticultural efforts. His natural love for horticulture; his enthusiastic belief in a great horticultural future for Oregon, and his determination to do all in his power to bring about that great future stayed with him as long as he lived.

Dr. Cardwell was ever active in every movement for the promotion of horticulture. In 1858 he joined with other local horticultural enthusiasts in organizing the Multnomah Fruit Growers' Society. This and one or two other similar societies were the fore-runners of the Oregon State Horticultural Society which was organized in Potland in 1885. At the organization of the Society Dr. Cardwell was elected president on the motion of J. H. Lambert. During the years when Dr. Cardwell was president of the Society his time was very valuable in a financial sense, but he was always ready to make the financial sacrifice involved in attending the meetings of the Society, even when the meetings were held quarterly as was the case during a considerable portion of the time while he was president.

In its earlier years Oregon was comparatively free from insect pests and plant diseases. With the coming of the railoads these pests and diseases came and flourished. The State Horticultural Society saw the need of legislative aid in checking the spread and ravages of such pests and diseases and prepared the law creating the State Board of Horticulture. Dr. Cardwell took such an active part in this work that he is known as the father of the Board, but the enactment of the law creating the Board could not have been brought about at that time had it not been that another great friend of horticulture, E. L. Smith, was speaker of the House of Representatives at the session of the legislature which enacted the law creating the Board. The bill was saved from final defeat only through the vigorous and effective work of Mr. Smith. Dr. Cardwell was appointed first president of the State Board of Horticulture and continued to serve as such for ten years. In 1893 he was appointed Horticultural Commissioner for Oregon to the Columbian Exposition at Chicago, and given an appropriation of $7500 to make an exhibit. The wonderful success of Oregon's horticultural exhibit at that exposition has not been forgotten, and when it was over Dr. Cardwell turned back into the state treasury an unexpended balance of $2000.

Dr. Cardwell's interest in horticulture was not confined to fruits. He early interested himself in the indigenous trees of Oregon, and called attention in published articles especially to our wealth of coniferous trees, considered from both commercial and esthetic standpoints. He planted and carefully cared for at his home beautiful trees, shrubs and plants of many kinds, giving the preference to those which are natives of Oregon. His love of trees, shrubs and plants was so great that when, after the terrible accident which not one man in a hundred of his age would have survived, he became able to walk feebly on crutches, he found his way out to work among his shrubs and flowering bushes and plants. It gave him great pleasure to share his horticultural treasures with others. But a few days before his death he made with his own hands cuttings from his choicest rose bushes for a friend who called on him.

Two types of men are essential to progress in horticulture, as well as to progress in everything else—men of vision, faith and enthusiasm, and men who apply to their work practical business methods. Without the man of business point of view and practical commercial methods success is not possible. The men of vision are, however, the animating spirit. If they disappear the community or industry which has lost them will ere long be fitly described as dead.

Dr. Cardwell's great service to Oregon horticulture was due to his being in horticulture ever the amateur; the enthusiast; the man of vision whose faith in Oregon's great horticultural future survived every personal disappointment and dominated him to the end. Throughout his long life in Oregon he contributed more than any other one man to the maintenance of its horticultural spirit.

From the viewpoint of the man who never does anything until it has been shown that it pays to do it, Dr. Cardwell was nearly or quite a failure in his horticultural work. This sort of failure has been typical of men who point out the way to others. The memory of such men remains when those who had merely succeeded in financially enriching themselves are forgotten.

Chairman: In addition to what Mr. Williamson has just offered, we would like to have something on the part of Mr. E. L. Smith who was for so long a time connected with Dr. Cardwell in his work. If Mr. Smith would feel like it we would be glad to have him say something.

Mr. Smith: Mr. President and Gentlemen, I feel that I am physically and mentally unable to add any words of eulogy to those to which you have just listened. My acquaintance with Dr. Cardwell was long and free and we became quite endeared to each other. In the earliest days when we held our meetings and fifteen or twenty was all that would be out, Dr. Cardwell was on hand. I was overwhelmed when I heard of his death. In all our intimacy and in all our acquaintance, he taught me to love him, which I did.

Chairman: I was a friend of Dr. Cardwell, also Mr. Power. Our acquaintance extended over several years and I will say that it led me to hold them in very high esteem. Mr. Power was a very active, earnest young man as I knew him first. He was for several years, as was given in the paper read, a man engaged in various enterprises in this state. He made a very efficient secretary. He followed Mr. E. R. Lake, who was secretary of this Association and was finally given a position in Washington and it was at his recommendation that Mr. Frank Power was made president of the Association. My acquaintance with Dr. Cardwell was also enjoyed. As Mr. Smith has said, he was always on hand at the meetings. He was an earnest man in his horticultural work. I remember once having had an invitation with him to go to dinner, during which he talked about his home that has been described in the paper. He talked of the dwarf fruit trees and how successful he had been in raising them.

Chairman: This little history that we have had was eminently due and proper to recognize the men of worth who have been connected with our Association.

Prof. Childs: At the request of Mr. Minton I have prepared a paper in reference to spraying and also relative to distribution of scab as it is found on the individual apple trees. The observations that I have made this year pertaining to my year's work have not been completed so I will discuss only what I have found generally.

OBSERVATIONS ON SPRAY INJURY OF FRUIT AND FOLIAGE OF THE APPLE

By Leroy Childs, Entomologist and Plant Pathologist Hood River Branch Experiment Station

Owing to the fact that we have not undertaken a scientific investigation relative to the causes that induce spray injury at Hood River, this paper will not treat the subject in a technical way or attempt to discuss the chemical or physical action which results when a fungicide of a harmful nature is brought into contact with plant tissue. The discussion will treat in a general way, observations that have been made at Hood River during the past three years. The suggestions that are offered, though more or less well understood by our local growers, should if put into practice in locations in which lime-sulphur is used much less extensively, be of assistance in reducing spray injury which occasionally causes appreciable losses.

Spray injury or spray burn of fruit and foliage has proven the greatest stumbling block with which the investigator has had to contend since the science of spraying was inaugurated for the control of insect pests and plant diseases. It is this factor, spray burn, that has made control work very difficult and has up to the present time made it impossible to control apple scab with relative ease. Many chemicals, possessing great fungicidal merit can not be used on account of the very decided harmful action they cause when brought into contact with plant tissue. Bordeaux mixture, a fungicide that can be used with perfect safety on many plants and which was used for several years on apple as a summer spray has gone into the discard owing to the injury to fruit and foliage that it causes.

With the shelving of Bordeaux mixture, which is surpassed by no other fungicide as an agent used for the control of scab, have been many other copper compounds—all eliminated on account of the disastrous effect produced to both fruit and foliage when applied in the form of a spray. The effect of various copper compounds having been largely determined, investigators directed their energies toward the discovery of some element which would not only prove an effective fungicide but which would lack the discouraging property, spray injury, when applied to foliage. Workers are still actively engaged in this field of endeavor for there is still lacking an effective fungicide which can be applied under all kinds of conditions with entire safety. In the control work carried on for apple scab these energies have been confined largely to the exploitation of sulphur, the pure element and in the form of many compounds.

These activities have resulted in the concoction of many proprietary spray materials guaranteed to meet all demands that were necessary only to be pronounced inefficient when put to all kinds of tests. Lime-sulphur concentrate, one of the oldest sulphur sprays, one that has been subjected to more tests, one that has been more condemned and praised stands today the best fungicide that can be used in controlling apple scab.

In dealing with the subject, spray injury, one is confronted with many unknowns owing to the limited knowledge that is available at present. Years of experimental work in the control of plant diseases have demonstrated the fallacy of drawing hasty conclusions with reference to the actions of insecticides and fungicides and their effect on plant tissue. There are several examples of spray materials that have been used for one, two and even three years before conditions were such that severe injury in the form of a burn appeared. A thorough test has to be one carried over a series of years. The investigator has to take into consideration all types of seasonal variations, including that of temperature, humidity, rainfall and the like, along with the plant development at the time applications are made and for a period of two or three weeks following during which time the fungicide must be considered an active agent. Obviously this is a task requiring many seasons' observations that all possible chances of variation and their resultant effect be determined. In the West "exceptional seasons" are always occuring. Often we hear about them every other year or even more often.

Geographic variability seems to play an important part in the local adaptability of spray materials, making sweeping recommendations rather dangerous, if widely different climatical conditions exist. For example certain types of arsenical sprays can not be used without causing a foliage and fruit injury in the apple orchards of Watsonville, California, while these same materials prove very satisfactory in other apple growing sections of the state. The effect of the fog at Watsonville, which is a coastal town, has been demonstrated agent in bringing about this injury. Further investigations of this sort will doubtless aid in explaining the cause for reported "antics" or supposedly safe spray materials.

Turning to our own investigations and the problems that we have to face, our experiments have demonstrated beyond a doubt that lime-sulphur concentrate is the best fungicide that we can employ at the present time in controlling apple scab. During the past three years nearly every spray material that has given any promise in other sections of the country have been tried out but none have surpassed the all-round attainments obtained with lime sulphur.

Since the introduction in 1907 of lime sulphur as a summer spray by Dean Cordley, this fungicide has rapidly displaced all other not only in this country but over the entire apple growing world. Its application being made subject to changes in these many localities to environmental variables present. During this period of nine years this spray has made many friends and many enemies. Its popularity has fluctuated from the lowest condemnation to the highest of praise. Why? Because it will burn under certain conditions both known and unknown. Nevertheless with the increased knowledge that is being yearly gained its use is spreading rapidly and with much less injury to the apple.

In Hood River alone, approximately 4000 barrels of the concentrate were used during the spring of 1916; twice as much as ever used in a single season before and with practically no loss resulting from spray injury. This successful use is obtainable only when applied within more or less well defined limits which have been brought out in years of experimentation by many workers. Yet occasionally the material burns, and burns severely under conditions which still can not be accounted for.

Severe lime-sulphur injury, as observed by the writer, may occur following any of the five applications that are now used. Severe injury on healthy, regularly sprayed trees has only been noted following the "pink spray" and that of the "thirty day" application. The latter injury is the more common one in which the fruit is baked and there occurs a well defined foliage burn. A very decided injury usually occurs when lime sulphur is applied to the foliage of devitalized trees, such as those whose vitality has been reduced by disease, "winter kill" or drought. During the earlier sprays, that is, the semi-dormant and pink applications, the developing foliage on weakened trees has been observed to be practically killed, retarding normal development of the trees fully three or four weeks. This type of injury was quite prevalent at Hood River during 1916 and I imagine in other sections where lime sulphur was used owing to the prevalence of so called "winter killed" trees in the Northwest. With these severe injuries occurs a normal killing of the edges of young growth following usually each application. This form of burn is not considered injurious, our observations during the past year show that this cumulative injury demonstrated in the form of a retarded foliage development delayed maturing of fruit and foliage—as compared to the unsprayed trees—fully two weeks. Considering the destruction of foliage surface, the food makers of the plant, over a period of years there is a possibility of cumulative injury which in time may greatly devitalize the tree. At the end of this year's observation, 1916, the sprayed trees appeared equally if not more vigorous than the unsprayed though the leaves were much thinner during the early part of the summer.

As has been stated before occasional serious injury results, the cause for which is not apparent. The writer had occasion to investigate an extraordinary injury of this type during the past spring in an orchard at Parkdale, Oregon. This occured at the time of the pink application. Thirty degree Baume lime sulphur concentrate, diluted one to twenty-five parts of water was used. On the second of the three days required to spray the orchard an extremely severe burn occured, being especially noticeable on the Newtowns. It was estimated at the time that full 50 per cent of the bud clusters were killed along with the major portion of the young foliage. The day upon which the spraying was done was cool, part cloudy and occasionally misty showers fell. A light frost was recorded the following night. None of these factors are considered as contributors to spray injury. The injury which appeared a few days later was so distinctive that for several weeks it was possible to tell to a tree where the spray had been applied on this particular date. The owner who has had a great deal of spraying experience reports that he is positive that no irregularities occured in making dilutions or that different materials were used. The lime-sulphur all came in the same barrel. Other orchards reported a burn which took place on trees sprayed this particular date. From all appearences the day was no different than many others upon which spray was applied even to the extent of a light frost occurring following the application at which time no injury resulted. This is an example of one of the occasional irregularities that appear with the use of lime-sulphur. It is these unexplainable occurrences of damage to the trees that have made so many enemies of this fungicide. This same type of injury has also been reported as occurring following the calyx application; and which has been the supposed cause for the heavy dropping of the recently formed fruits. In the three years during which time the writer has been actively engaged in experimental work pertaining to the spraying of apples such a phenomenon has not been observed in orchards regularly sprayed with lime-sulphur. This brings us to another phase of burning, especially that of the late type, together with some suggestions relative to the cause.

From observations made in the field and as noted in some of the experimental plats during the past three years there seems to be a definite relation of susceptibility to various late forms of spray injury, i. e., (after fruit is well formed) to the spray program that has been in use on the trees during the early season. This relation was found to be true in some experimental work carried on in the control of codling moth in 1914. Several different combinations of sulphur were used in these experiments and it was noted in all cases that not only a very serious foliage and fruit injury occurred but a heavy fruit drop resulted on the plats which had not received applications of sulphur earlier than a late calyx spray. On adjoining plats which had received regular applications during the spring, traces of spray injury were found, in no instance serious. The fruit drop was much less than that which occurred on the plats sprayed late.

Investigation of extremely severe cases of spray injury to fruit and foliage that have been brought to my attention, can be traced usually to some irregularities in application. Late lime-sulphur burn is usually found to be more serious in sections that up to the present time have not put into practice the regular schedule that is now recommended in Oregon for the control of apple scab. The growers in these fruit sections, as a rule, are not entirely familiar with the limits, especially with reference to the temperature that lime-sulphur may be used with safety. Our investigations of 1914 seem to be of some value in explaining the cause of severe injury where irregularities in applications occur. Injurious effects resulting from the use of sulphur on trees not sufficiently prepared from late treatment have been reported in other apple districts.

In certain sections of California it has been found necessary to use Atomic sulphur early in the season to prepare the trees for applications strong enough to control powdery mildew after fruit and foliage has become well developed; otherwise a severe fruit and foliage drop occurs. This action has never been thoroughly tested out in an experimental way at Hood River though reliable orchardists have reported such to be the case. From experimental evidence gathered during the past year it has been demonstrated that no injury occurs with the use of atomic sulphur 12-100 in the thirty day spray if applied to trees that have received the regular lime sulphur applications throughout the season. It would appear, then, that sulphur in a different form, as in the case of lime-sulphur, sufficiently stimulates or hardens the fruit and foliage to such a degree that atomic sulphur can be used late without the possibility of injury.

During the past nine years Hood River has gone through many of the experimental stages in the use of lime-sulphur. During the earlier years of its application burn was often severe. At the present time large amounts of the fungicide are used with comparative safety. In 1910, following three years of experimental work at Corvallis and in Hood River with this material Hood River orchardists used this spray extensively. The knowledge on the subject at that time was more or less incomplete, irregularities occurred in the applications during the early part of the season and a great amount of spray injury resulted following the last application or thirty day spray. This burn was so extensive that orchardists condemned many of the recommended applications, pronouncing them unsafe. On this account, fearing injury, general irregularities in the application of sprays existed for several years, the latter applications being abandoned altogether. Tremendous losses resulted from scab infection which reached its height in 1915.

Experimental work of a definite character has been carried on at the local experiment station since 1914 including three years work with lime-sulphur in several dilutions in four and five applications a season. The injury to fruit, unlike that resulting from the use of Bordeaux mixture, has occurred following the application of the ten day and thirty day sprays. The burn resulting from the use of the former application has been insignificant during these three years. The injury from the thirty day application or total loss to fruit in percentage during this time is as follows: 1914, 7 per cent; 1915, 4 per cent; 1916, 6.88 per cent. This work includes experiments carried on in different parts of the Hood River valley all of which have been conducted on the tank basis and were applied under typical orchard conditions. During these three years this spray-injured fruit could all have been removed by thinning, a proceedure which would have been of benefit to the trees and remaining fruits.

In 1916 all sulphur compounds used, including practically all of the proprietary spray materials on the market, produced an injury equaling or exceeding that caused by the use of lime-sulphur with the exception of dust sulphur and self boiled lime-sulphur. In the case of some of these materials, burning was found to occur which was not present in 1914 or 1915 which again demonstrates the necessity of trials carried over a period of years to determine their qualities, both good and bad.

The exact cause for the occurrence of lime-sulphur injury has not been determined. The injury or bake on the fruit invariably occurs at times of rather high temperatures, the degrees of injury rapidly increasing as the thermometer raises above 90 degrees F., (i. e. in the shade.) The actual temperature required necessary to burn the fruit, however, must be much higher than this for invariably it is only those apples that are exposed to the direct rays of the sun that are injured. The greater portion of these are found on the southwest exposure of the tree. Some investigators attribute the occurrence of this injury to the action of the sulphur in the different forms that it is present on the fruit; others believe that it is not the direct action of the sulphur but that of absorption of heat, when the fruit is exposed to the direct sunlight. Not having carried on any experimental work along this line I am not prepared to state which I believe to be the case. However, from field observations it would appear that both factors contribute to this injury. Plant tissue is very sensitive to sulphur fumes, which, to be changed into this state from free sulphur requires the absorption of a large amount of heat. If one has ever been in an orchard on a hot day (i. e. 95 degrees in the shade or better) following an application of lime-sulphur, the strong sulphur fumes present indicate that both absorption of heat and volatilization is occurring and it wolud appear, contributing to the burn that is taking place.

Many orchardists are still unfamiliar with the fact that the occurrence of sulphur injury is not only possible immediately following the application of the spray if the temperatures are high, but burn is also liable to occur at any time within a period of at least fifteen days following the spraying if high temperatures are reached. For this reason much judgment should be used in applying the last scab spray. A careful watch of the weather conditions at this time of the year is essential. A study of the temperature records over a period of years at Hood River indicate that as a rule a hot spell of three to six days duration occurs toward the latter part of May or early in June, which in breaking is followed by two to three weeks of moderate weather. The last spray should be applied as this hot spell breaks in order to avoid the high temperatures and to protect the fruit and foliage from infection which is quite liable to occur with the rains that usually follow. Naturally no definite rule relative to this application can be established as its use is dependent upon the irregularities of the weather. It is up to the orchardist, however, to take advantage of every opportunity offered at this time. The June rains of 1916 were responsible for at least 75 per cent of scab infection found in Hood River during the past season; undoubtedly the same condition existed in other sections of Oregon. Is not a burn of 8 to 10 per cent better than 20 to 50 per cent scab or even more?

The extent of actual loss resulting from spray injury is usually greatly magnified in the eyes of the grower. Burned apples stand out very conspicuously, especially if the foliage injury is pronounced while the uninjured apples are entirely overlooked. The writer on several occasions has visited orchards that have been reported "burned up." Many of these on the face of things appeared badly injured. One orchard in particular had been subjected to an extreme test. Hired help, unfamiliar with the possible injuries that might result from using lime-sulphur during hot weather, sprayed through several days which time the thermometer registered around 100 degrees F. Many apples on the southwest portions of the trees were badly baked as well as a large amount of foliage. Percentages were determined and it was found that the injury in this quarter of the trees amounted to 25 to 30 per cent of the fruit; fruits protected from the sun were uninjured. The average total injury was slightly variable on the different trees and ranged between 12 and 20 per cent. The owner was much relieved after the exact percentages were figured out. The burnd apples were all thinned off. The grower was interviewed after the crop was harvested, reporting that a fine clean crop was harvested.

As has been the observation of workers in the past, we have found that there is a definite relation existing between spray injury and the method in which the material is applied to the fruit and foliage. The drenching of both is much more conducive to this injury than a thin, even application. The popular idea of the term "drenching" means the application of a spray at a high pressure and using a coarse nozzle, a combination which is supposed to place more material on the trees. It is true more material is used in spraying a tree than where a fine nozzle, throwing a mist spray, is used. Nevertheless, in well sprayed orchards it has been my observation that more actual drenching occurs in using the mist spray than where the coarse, "drenching," type of nozzle is employed. This is especially true in applying the semi-dormant and pink applications. At the time of these applications the developing foliage is thoroughly covered with a thick hairy substance and the orchardist usually sprays until the trees begin to drip. The spray from the coarse nozzle, strikes, breaks and runs immediately; in breaking much of the material runs off. From the mist spray the hairy foliage collects and holds, in the form of minute globules, a much larger amount of spray material. The union of these globules is often slow and in many cases not sufficient to cause any pronounced run-off. The result is that there is not only more spray on the tree but a thicker, more even coating covers all of the young foliage. In the case of the coarse spray there are places such as the edges of the leaves upon which the spray accumulates in large drops; in these limited places the spray, of course, is thicker than that described as occurring where the mist spray was used. This condition is more noticeable late in the season than at the time of the earlier applications. Observations relative to these points were not made on experimental plats but in adjoining orchards in both of which the writer was carrying on experimental work. In one orchard where the mist spray was used a vtry noticeable burn occurred; in the other where a coarse spray was used injury could be found but it was not general. The pink spray was applied at the same time in both orchards. Thirty degree lime-sulphur, diluted one part to twenty-five parts of water was used at the same pressure and applied with a Friend nozzle, one fitted with a coarse plate, the other the finest pin-hole. The work was well done in both orchards. In the case of the foliage sprayed with the coarse nozzle it was observed that the injury found on the leaves was confined to the edges and in spots where the spray had accumulated and could not run off. In very few cases were the leaves injured in their entirety. Applications made in the form of a mist produced an injury which involved the entire leaf. This seems to indicate then, that unlike the residue deposited on the foliage from the coarse spray, that from the mist nozzle was distributed more evenly over the whole surface and in a quantity sufficiently thick as to cause a uniform burn. In some extreme cases the flower buds were killed but this was insignificant as all of the trees demanded heavy thinning during the summer. What is the significance of these observations? For complete protection from scab infection we all know that one object above all others necessary is to cover everything thoroughly. This is undoubtedly more easily and completely accomplished by using the mist type of nozzle and for this reason its use should be continued, yet, as has been explained, the work can be decidedly overdone if the spraying is continued until all parts of the trees are holding all of the spray that they can without running off. To eliminate, or at least reduce, this possibility of injury, two courses offer themselves. One is for the grower to use more care in making the application and the other the reduction of the strength of the spray, the limits of which can only be determined by experiment. The coarse spray, as has been shown, in running from the tree leaves only a very thin film of spray which at best can contain but a very small amount of sulphur. With the mist spray, a thick even coat of sulphur is piled up, and which it would appear could be reduced in strength and still not dismay the fungicidal value of the application. Investigations along this line will be considered in the work that is being planned for next year. However, the reduction of the dilutions now in use are not advised at the present time.

Further investigations will also consider, as they have for some time in the past, a substitute for lime-sulphur in the thirty day application, a period at which time most injury from the use of this fungicide occurs. Encouraging results have been obtained in some instances. It seems quite possible, as indicated from some experimental work in hand, that our present very limited use of Bordeaux mixture can be extended and used as a substitute for lime sulphur at this time of the year in case of some varieties. In general, conditioning factors which are favorable for the cause of Bordeaux injury are just the opposite for lime sulphur. The application of Bordeaux even in the semi-dormant, when fruit buds are hardly showing, will cause a russeting on the fruit as well as applications following bloom. Rainy weather has been found to increase the injury. Lime sulphur used during this time never marks the fruit that mature. It has been demonstrated that Bordeaux can be safely used in the summer (at least in Hood River) while the use of lime sulphur with the approach of summer is decidedly dangerous. The line of danger is rather definitely drawn in the case of lime sulphur but the line which separates safe from unsafe in the case of Bordeaux is not well established at the present time. Some varieties in 1916 were sprayed with Bordeaux in the thirty day spray with no injury, others were badly russeted. The use of a fungicide in the form of a dust application, which will not be discussed in this paper also offers a means by which injury may be avoided. Our work along this line is not sufficiently complete at the present time to make any suggestions advisable.

The following short descriptions indicate the character of injury that has been observed in the case of some of the sulphur compounds used during the past season. The type of injury observed with all of them closely resembles that caused by lime sulphur, but possessing constant slight variations which are sufficient to permit differentiation in the field. The burn accompanying the use of lime sulphur is a deep bake in the case of sun exposed fruits diminishing in degree according to the exposure to a russet closely resembling that caused by Bordeaux. The injury arising from the use of atomic sulphur very closely resembles that caused by lime-sulphur and its variations. Here the injury results from the action of the sun on the pure element, sulphur, while in the case of lime-sulphur it acts upon the sulphur which is in the form of sulphides on the fruit. Barium tetrasulphide produces a deep blackish bake in severe cases; a deep crack usually separates the blackened area from the normal flesh. Russeting also occurs on more protected fruits. This injury was observed to be about as extensive as that caused by lime-sulphur during 1916. The injury caused by lime-sulphur plus iron sulphide, used in controlling both scab and mildew, differs from that of lime-sulphur alone in that the injured surfaces become shiny brownish black, pitted in some cases. The injured cuticule seldom cracks. Occasionally fruits show a speckled, pock-marked surface. This injury, resulting from the use of this combination, was found to be more extensive this year than that on the lime-sulphur plats and is contrary to results that have been obtained in the East where iron sulphide is added to reduce the burning properties of lime-sulphur. Sulphur applied to the fruit in the form of dust has been observed to cause some injury—up to the present time this has been very limited. It resembles that caused by lime-sulphur but in no case is it as severe. Lime-sulphur will burn even where greatly diluted. At dilutions of 1-65 and 1-75 very few fruits were found to possess the deep bake, which is so characteristic of this fungicide but there occurs a mild russet, largely confined to an injury of the outer cuticule of the fruit which affects about as many apples as where the stronger material is used. Usually much of this damaged cuticule sloughs off before the apples are harvested, giving the apple the appearance of the Roxburry Russet.

In order to reduce spray injury to the minimum, orchardists should use great judgment in spraying their fruit trees. Proprietary spray materials should only be used after they have been thoroughly tested. Quack cure-alls guaranteed to relieve trees of all ailments should be shunned altogether. As has been pointed out in this paper there are still many unknown factors that occasionally produce injury even with the use of our standard sprays—a fact which should influence orchardists against the use of less tried materials that needless injury result.

Prof. Childs: In connection with the work here in Hood River I counted and recorded all the types of injury that were present. I can't give a report at this time of all the sprays that I have used this season. In connection with work a very interesting point relative to the distribution of scab on trees was noted. This, of course, can be applied—though I didn't work it out—to all forms of orchard pests such as aphis and leaf rollers and it demonstrates that where the orchard is falling down today is in the tops of the trees.

Mr. Minton: I would like to ask, did you say we should cease spraying when the thermometer reaches 90 degrees?

Prof. Childs: Ninety degrees is fairly safe.

Mr. Minton: Do you take into consideration humidity?

Prof. Childs: If it gets over 90 degrees it is well to stop spraying. I would think the chances are that it would be less dangerous because the dry heat is more liable to cause a burn. That is my idea.

Mr. Minton: Have you taken into consideration soil conditions in your experiment?

Prof. Childs: A devitalized tree is much more susceptible to spray injury and that would be true if the soil was more dry.

Mr. Minton: Suppose your soil is wet?

Prof. Childs: In some wet soil that we have here we have what we call winter kill. The soil is wet during the spraying season and the trees are suffering from a drouth that has occurred the summer before and they are quite badly burned.

Mr. Minton: I spoke in relation to the effectiveness of the spray to killing the scab.

Prof. Childs: If you get the spray on the trees and have them well covered they can't possibly get infected no matter what kind of soil.

Mr. Leis: How about the fall scab?

Prof. Childs: If the fruit is put into a temporary storage, damp, there is danger, but usually our summers here are so dry that little scab can possibly develop.

Mr. Leis: I have noticed that when my trees did not have any scab in June they did have some in the fall.

Prof. Childs: Have you watched the tops of the trees? I do not think that even under conditions in the Willamette valley that you would get much scab development.

Prof. Childs: Here we usually apply Bordeaux in the late summer spray. That usually occurred about the middle of August and if we get early rains that would serve as protection from scab and anthracnose.

Mr. Leis: Does the summer spray help?

Prof. Childs: If you get a spray about the middle of August and put it on thoroughly it has been our observation that it lays over until fall on the limbs and serves as protection until fall. If you have your trees well covered when the early fall rains come it offers very good protection. In orchards that are seriously infected we also recommend a spraying immediately following the harvesting of the crop. If you have a badly infected orchard it would pay you to put on extra spray.

Dr. Bailey: Have you ever considered that the Bordeaux in this country affects the trees and makes them brittle?

Prof. Childs: I have never made that observation.

Mr. Leis: They have recommended Bordeaux as superior to lime of sulphur. I have never sprayed with Bordeaux and if any one would go through my orchard I think they would find as clean an orchard as there is in the Willamette valley. I mean to say that I have never used any Bordeaux and you cannot find any anthracnose in my orchard.

Prof. Childs: Do you use that in the fall spray?

Mr. Leis: I have never sprayed in the fall.

Prof. Childs: How old are your trees?

Mr. Leis: Twenty-five to thirty years old.

Prof. Childs: You are pretty fortunate.

Mr. Gardner: I would like to raise this question in connection with the spraying. I would like to know whether or not it has been found that the scab may he beld pretty well in check on such varieties as the Gano, Grimes, Ben Davis, Black Ben, etc., without any appearance of the fungus after the calyx spray. Has any of the experimental work here been of such a nature as to show whether those varieties need fungicide after the first two or three sprayings to control scab? Under the conditions here can the last applications of those fungicides be omitted?

Prof. Childs: In answering to Mr. Gardner's question I would say that we have never carried on any experimental work along that line, I have observed, however, especially this year, that the case of red varieties—that would include Ben Davis and Spitzenburg—were excetpionally clean from scab and notwithstanding that long rainy weather we had. I think that suggestion is a subject worthy of further investigation.

Chairman: If any of you have further questions, prepare them and we will try and find time for them later on. Now we come to another form of spraying one that has never been discussed or used much in this valley. Mr. F. A. Frazier is to have the subject of Dust Spraying this afternoon.

Mr. Frazier speaks on Dust Spraying.

DUST SPRAYING.

By F. A. Frazier.

I have not prepared a formal paper on this subject, nor will I attempt to handle it in a technical manner.

The subject has been under consideration and trial for several years by one of the leading experiment stations of the country, namely, the experiment station of Cornell University.

I have had the pleasure and the good fortune of meeting, on different occasions, Dr. Reddick and Professor Crosby, who have been working together on the dust method for the control of apple scab and codling moth in Western New York.

In an interview with Dr. Reddick at Cornell, a year ago, he declared his conviction that the dusting method had been proven successful beyond a question. Again this fall I met Dr. Reddick after he had inspected a number of orchards in Western New York. These orchads had been treated by the dusting method entirely. In answer to my question as to whether there had been any change in his views, he replied that he had no reason to change his previously expressed opinions.

The season of 1915 Cornell closed their experimental work with this method with their complete and unqualified endorsement.

As your chairman has intimated, I have been interested in spraying problems for a number of years. After my success in the manufacture of lime and sulphur solution in Oregon, several years ago, I went east to spread the gospel of lime-sulphur as an apple scab spray, and it was then, through Cornell Experiment Station, that this material was thoroughly tested out and demonstrated as a scab-control spray; and so, now, I have nothing to say in detraction of lime-sulphur as a scab spray. However, it early became apparent to the owner of an orchard of any consequence that he was losing out in his efforts to control scab, even with so good a spray as lime-sulphur.

This was not because lime-sulphur in itself had failed, but because of conditions which often prevented its application at critical times. And, it was because of these conditions that Cornell undertook to work out some means whereby the New York orchards could be protected by something which permitted a quicker application. The dusting method is the result of that investigation and of succeeding years of trial and demonstration.

The importance of this you may appreciate, for it was only last year that you could not get into your own orchards and apply the liquid spray which was necessary, and the result was an almost total loss of your crop. This had occurred before and it may occur again. It also occurs in the control of codling moth when a spray must be applied within a limited time in order to insure protection.

Several districts in the Northwest had an example of this failure a year ago. At that time many blamed the sprays used, but we all know the blame was not on the arsenate of lead, but in the failure to apply it within the critical time.

It was found that the apparent failure of the dusting method, as practiced several years ago, was attributable to coarse and improperly prepared materials and to inefficient blowers. When finer sulphur was used a greater degree of success resulted; and when a sulphur powder was produced, the larger part of which would pass through a 200-mesh screen, the results began to approximate the best results obtainable by use of lime-sulphur solution.

With the success in the use of the finely powdered sulphur against apple scab came the use of combinations with powdered arsenate of lead for the control of codling moth, and the record is that the poison applied in this way has given better results at a far less cost than have ever been accomplished with liquid sprays. The combination of sulphur with arsenate of lead in the proportion of 85 per cent sulphur and 15 per cent arsenate of lead powder has met with favor. Then in addition to this came the use of finely-powdered tobacco dust, containing a considerable per cent of nicotine, which supplies the requirements which have been met by nicotine sulphate, which is used in the control of aphis and other insects. Thus we have an all-round combination for summer spray in the dust form.

Now, I am not presenting this dust proposition as a cure-all, nor as one that obviates the necessity of intelligent use or thorough application. These are just as essential in the use of dust as with any liqiud spray, but there are two big advantages standing out prominently in the use of dust; one is the time element or the quickness of application, for one can do with the dust in one day as much as can be done in from five to seven days with a liquid spray, and within this time element is the other advantage of making an application when it would be impossible to apply the liquid, and this often means the saving of a crop.

So, with these two points standing out, as well as other advantages, I believe the dusting method has merits which warrant the consideration of any progressive fruit grower.

I had occasion to investigate the matter quite a bit a year ago, and again this fall, especially in New York state, and have had the pleasure of meeting a large number of fruit growers, leading men, who have tried it; and, while there are some who have not succeeded so well as they might have, the general opinion is, "It is a success."

Coming through Colorado recently I stopped at Grand Junction. I found there an example of getting started at a thing in a premature way. I found they had not been very successful in their efforts to use a dust spray, and upon investigation found the reason why. In the Grand Valley the codling moth is the one big problem. With three distinct broods it has been found necessary to spray six or seven times. Naturally the growers were interested in any means promising relief from so unpleasant a task. It is evident they had heard all about the virtue of the dust spray without learning anything about what materials to use, or how to use them. I found they had used improperly prepared lime dust as a carrier for arsenate of lead, and that the mixing had been done in a crude way—sometimes on a barn floor, stirred up with a hoe; and, then, in the application, they had not deemed it necessary, in all cases, to cover each side of every row of trees. It is needless to say these people failed of getting the best results. These people were inclined to blame the climate, but in this case the climate was not guilty.

I want to say here that in comparing the dusting method with the liquid method of spraying, it is not a fair measure of comparison to test them side by side the same as you would two liquid sprays. For, if the liquid could be put on at all times when it should be put on, the need of the dust spray would be less apparent. The beauty of the dust spray is that it can be put on at times when it is impossible to put the liquid on, either because of weather conditions or of shortness of time. Therefore, if the dust is applied only at given times when the liquid is applied, results may show in favor of the liquid; but, even, for sake of argument, should the dust be less effective than the liquid spray when applied on identical dates, there DO come times when the whole value of the orchard crop depends upon the spraying. Weather conditions or time limit prevent the application of the liquid and the crop is partially or wholly lost. The dusting method over-comes this and allows of application when the liquid spray has no value whatsoever. In this, in a large measure, lies the efficiency of the dusting method; and yet, as a matter of fact, orchards dusted in the same thorough manner as the liquid is applied, are showing quite equal results as against apple scab, and superior results as against codling moth and some other insects and diseases.

President: Mr. Frazier, before this subject is opened up for questions, will you just briefly tell us HOW this dust is applied, and the cost as compared with that of liquid spray?

Mr. Frazier: As I have stated it is absolutely essential to have the materials very fine, and when a carrier is used, such as lime, gypsum, or talc, these also must be approximately as fine as the insecticides or fungicides used, and even and thorough distribution is necessary. Professor Childs has told you of the necessity of having fine mist in liquid spray, and you all know that even with the finest mist spray the tendency is for the spray to gather into globules, and when dry leaves the effective material in spots. The area between these spots is unprotected. With the dust properly applied the whole surface is evenly covered. The dust is applied by means of a blower. The blowers used in large orchard work are driven by gasoline engines and the engines you are using on the liquid spray machines can be utilized for this purpose, thus saving a part of the cost for a blower outfit. An efficient blower can now be obtained. With it the materials are evenly fed into the air pipe with a control on the feed so materials are not unnecessarily blown out, and providing for discharge equal to work required. This blower is mounted on any wagon or truck, and requires two men, or a man and a boy—one to handle the team and the other to care for the discharge pipe. In operating, the work should be done from the windward side so the dust is carried from the operator through the orchard. The team is kept in motion and as the operator comes opposite a tree, if it be a large one, he makes a circular sweep from bottom to top and down so as to quite completely cover the individual tree.

Mr. Minton: Do you spray on the other side as you come back?

Mr. Frazier: The application should be made on both sides. This may be accomplished when winds change, or during the quiet hours of the morning. If it becomes necessary to make application during constant windy weather the team should be driven into the wind and the operator apply to both rows, right and left, allowing the dust to drift to the rear.

A Member: Can the dust be used as a dormant spray?

Mr. Frazier: We do not recommend the dormant spray, as yet. We have successfully used the soluble sulphur as a dust application for San Jose scale for two seasons, but we are not yet able to produce this material in commercial quantity for that purpose. The dormant or delayed dormant spray with soluble sulphur or lime-sulphur as a liquid should be applied as usual.

Member: How long will this spray stay on the trees?

Mr. Fazier: It may wash off more easily than a liquid spray, but the evidence is that it sticks very well. We have been surprised at the way the dust has adhered to the foliage and the fruit. You all have noticed how the road dust sticks to trees along the way, even after winds and rain; then you know that there is on the young fruit a fine hairy fuzz into which the dust settles and by which it is held. Even after the fruit has become well grown and becomes apparently smooth, the evidence is the dust has uniformly produced fruit free from side worms.

Professor Childs: I imagine that would be true. I know it sticks very well.

Mr. Frazier: One of the first questions people usually ask is, "Will it stick?" It will stick, but, even allowing it may wash off a little more quickly than a liquid spray, you can repeat the dust two, three, or four times and still be ahead of your liquid spray in point of labor expense and time. This is because the dust can be applied so much more quickly. The cost of materials will at least be equal to the cost of liquid material, but the cost of application is one-fifth to one-seventh as much as cost of liquid application, and you all know the cost of labor in these applications is the big item.

Mr. Smith: What is the cost of this apparatus?

Mr. Frazier: You can get one of the best machines on the market for $275 or less, including engine and all equipment. If you have an engine, the cost can be cut by about $125. You can get a smaller and lower priced outfit. The large outfit requires about a 3-h.p. engine.

Mr. Stockdale: Do you require a mixer?

Mr. Frazier: The materials must be thoroughly mixed. If buying sulphur, lead, or tobacco dust separately, in bulk, you might have your local factory do your mixing for you. Or, an individual or a group of individuals could secure a mechanical mixer at a small cost. It is better, however, in beginning this method to use nothing but mixtures known to be properly prepared, and these can be obtained.

Mr. Minton: Do you use a carrier for the sulphur alone?

Mr. Frazier: Sulphur works better if mixed with some other material. If using sulphur alone there should be mixed with it, at least 10 per cent of finely pulverized lime, gypsum, or talc. If using 10 or 15 per cent lead no other dilutent is needed. A combination which makes an all-round good application consists of 40 per cent tobacco dust, 50 per cent sulphur, and 10 per cent arsenate of lead. This requires no other material as a carrier.

President: Mr. Frazier, as it is getting along in the evening I would suggest that if any one has any questions to ask that we will try to find time to discuss this later. I have heard of this dry spray for several years. It has merits or it would not be recognized by Cornell University. We will, then, wait until tomorrow, or until we get a little more time to take this up again.

Prof. C. I. Lewis, Chief of the Horticultural Division, O. A. C., was unable to be present, but had prepared his paper, which Secretary Minton read.

WINTER KILL IN MILD CLIMATES

By Prof. C. I. Lewis, Chief of the Horticultural Division, O. A. C.

Climatic conditions in Oregon and especially in that portion of the state west of the Cascade range, has for the past two years been hard on fruit trees. It has been, so to speak, unusual weather, although I hesitate to use that term, because I am beginning to conclude after eleven years residence in the state that the only weather we have is unusual. But to trace back our steps for a moment, we will remember that the summer of 1915 was extremely dry. We finished the year with 10 to 20 inches below normal rainfall. Many trees became too dry and suffered, others were overstimulated with irrigation or tillage, because of the very dry condition, which induced some men to practice methods which even under dry conditions tended to over-stimulate. This dry summer was followed by a winter of a very freaky nature. We find, for example, that during the entire winter in many sections the ground was unfrozen. It was during a portion of the time saturated with moisture and covered with snow from one to five feet in depth. At Corvallis, for example, we find that on January 19 the temperature dropped to 8 degrees, and there was hardly a day in the month but what had killing temperatures. By the middle of February there was an abrupt change in the weather. The temperature rose in the day from about 60 to 70 degrees and lowered at night to the vicinity of 30 degrees, which would mean that out in the open orchards freezing temperatures were experienced. In fact there were nine killing frosts during the month. During the latter part of the month the sap was beginning to rise in many of the trees. The abrupt change in temperature, amounting to 30 degrees in three hours, froze the sap. The next day the temperature again rising to about 60 degrees, caused a very rapid thawing. This alternate rapid thawing and freezing proved disastrous to many trees. Had the ground been frozen, the roots probably would have remained inactive, but I think with no frost in the ground the sap was encouraged to rise. The peculiar weather was followed by one of the heaviest frosts in history in the state during the first two weeks in May. The past summer of 1916 proved unusually wet and the fall extremely dry. This made ideal conditions for early killing frosts, and the first week of October found the temperature as low as 20 to 22 degrees. The dry fall seemingly had an influence in hardening the young fruit trees, but was not sufficient to check English walnuts and the result was extreme damage especially on the low lands to English walnuts. We find, however, just a reversal of conditions compared with February. The sap starts to flow late in the walnuts and the February weather did not affect them. On the other hand, with some fruits such as apples and pears, the sap starts to flow early and the weather did affect them. In the fall most fruit trees mature easily, but the walnut matures extremely slow. Thus the fruit trees had little or no damage and the walnuts because of active sap conditions were severely damaged.

We use the term winter killing in a rather broad sense. Strictly speaking it is not real winter damage as we would expect lower minimum temperatures to really give true winter damage. It is more a condition which is identical with sour sap. One of the causes is a fluctuating temperature, the damage being aggravated by unusual environment such as extreme drough, poor soil drainage or poor air drainage. The evidences of winter killing were variable. With apples there was a discoloration of the bark above the snow line and rapid splitting and loosening of the bark. With pears it was somewhat the same as with the apples, but in most cases the top of the trees was more severely damaged. On the older trees the blossoms fell, or the fruit shed rapidly after setting. The leaves in some trees did not develop to more than one-tenth their normal size. Some trees did not throw out any leaves. Most of the trees had uninjured roots and tended to throw up strong sprouts. The walnuts which were injured in the fall were simply frozen and meant in some cases a damage back to three year old wood.

Last spring some varieties seemed to be more affected than others. For example, trees that were worked over to Northern Spy stock did not seem as badly damaged as some varieties on their own stock. In an orchard consisting of Grimes on Northern Spy stock, there was little or no damage. Wageners were quite severely damaged. Ortleys showed little or no damage and Yellow Newtowns a small amount of damage, being perhaps more severe in the top of the tree than on the trunk. With pears the d'Anjou and Winter Nelis showed much more damage than Bartletts. D'Anjous on even some of the best rolling, deep, well drained soils of the state were very severely damaged. Young prunes and cherries showed a great deal of top damage.

The treatment of such damaged trees would naturally vary according to degree of injury. Where splitting occurred and only a few trees were affected, binding the bodies with burlap seemed to be efficacious. Where many trees were damaged, experiments were tried. One method consisted of tacking the bark to the tree, especially along the lines of cleavage, with heavy bill posting tacks. Very few trees so treated were lost. All sprouts on the trees having trunk damage should be allowed to remain. Where it was possible to secure long scions for bridge grafting, it was very easy to save such trees. Where this could not be done, the growing sprouts might keep the roots alive and could possibly be used in some cases this spring for bridge grafting. If the top dies entirely a new top can be developed from the sprouts, or, in some cases, it will probably be wiser to replant. For pears and cherry trees showing top damage, it was found best early in the season to leave the trees alone. Thousands of trees that at pruning time looked as though they were going to die, showed little or no damage by the middle of June. Those trees which, however, did not show indications of a rapid recovery, seem to be improved by a heavy cutting back of the tops. In many cases the trees were found to throw out adventitious shoots and develop a good healthy top. With walnuts which were severely damaged this fall, the only remedy would be to cut back to live tissue by early spring, so as to allow a proper outlet for the sap. Otherwise there will be an aggravation of a so-called sour sap condition.

One cannot help but feel in conclusion that these troubles can to a certain extent be controlled by keeping trees in as nearly a normal condition as possible. Conditions, however, this past year were so extreme that even with such trees some damage could be expected.

Mr. Roxbury suggested a change of the program so that Prof. Gardner's talk on "The Relation of Pruning to the Formation and Functioning of Fruit Spurs" be given in the afternoon when more of the local fruit growers could be there than in the morning.

G. G. Brown, horticulturist at the Hood River Experiment Station, gave a talk on "The Influence of Commercial Fertilizers on Bearing Orchards."

THE INFLUENCE OF COMMERCIAL FERTILIZERS ON BEARING APPLE ORCHARDS.

By Gordon G. Brown, Horticulturist of the Hood River Experiment Station.

Mr. Chairman, Ladies and Gentlemen: Some years ago and, to some extent, today a very serious yet comparatively simple soil problem forced itself upon the apple growers in various sections of the Hood River Valley. It had to do with vigor of tree and fruit production. Orchards formerly productive to a marked degree gradually began to fail. This was true not only of neglected orchards, of which I am glad to say we have but few, but also of orchards apparently (notice that I place emphasis upon that word) receiving the very best of treatment as judged by the standard practices of the time.

It did not require a person of highly trained horticultural ability to see that something was decidedly wrong. The trees not only showed that they were weak and devitalized, as evidenced by general appearance, but they gave striking proof of that fact in many ways. For example, terminal growth formerly vigorous and productive of fruit spurs was gradually giving way to weaker growth and in many cases was reduced to almost negative proportions. Fruit spurs formerly productive of plump fruit buds were now giving way to buds of an opposite character. The leaves formed were thin, small and sparse and failing to function early in the summer were numbered with the windfalls. The yellow, almost reddish, appearance of the bark also served to indicate the true run-down condition of the trees, and in typical cases these characteristics could be noted at long distances across the valley, especially in the dormant season. A heavy crop of blossoms, weak in character and sub-normal in size, frequently appeared, but owing to their lack of vigor were unable to set and carry to full maturity but a small percentage of fruit. Fruit, while possessing good color, showed such high percentage running smaller than 150 to the box as to place it in the secondary market value class.

Coincident with these facts two general outstanding features regarding care predominated: The first was that previously no irrigation had been given; the second, that long continued clean cultivation had been the general rule. The importance of the former is obvious and I will not deal with it here except to mention in passing that it is the serious intention of the Hood River Experiment Station to make a critical study of this practice under local conditions as soon as it is possible to do so.

Regarding the latter: It is now a rule long since established by agricultural practice the world over that clean culture practiced exclusively tends to destroy the organic matter of the soil. The relation of organic matter, humus, bacterial action, water holding capacity, and good tilth are widely understood. The relation of organic matter also to that all-important element, nitrogen, which makes for tree growth and production, is also well understood, but often not appreciated in a practical way. The soils in typically run down orchards differed from that which I have just indicated in a marked way. They lacked water holding capacity; they baked or puddled easily and on hillsides were much given to erosion. In some cases the organic matter was so badly depleted as to make the introduction of leguminous shade and cover crops such as clover and alfalfa, which depend primarily upon an abundance of moisture, a matter of extreme difficulty.

Those in charge of this station in 1914, comprehending the true situation, began a series of co-operative fertilizer experiments in the

Pine Grove district. Various brands of commercial fertilizers were used, carrying the principal ingredients, phosphoric acid, potash and nitrogen. These were used under different conditions, in different amounts and combinations. A limited amount of barnyard manure was also used. The results to date are so clear and consistent as to point to the unmistakable correctness of the general principles given and show plainly that the mature apple orchard located on a silt soil such as we have here is certainly no exception to the general rule. Owing to the fact that practically no response has been secured from applications of potash or phosphoric acid and that the most consistent and satisfactory results have been secured from nitrate of soda, I take it that a discussion of the latter work would be of most interest and practical value here.

For this work two typical Spitzenberg orchards about sixteen years of age were chosen. In both orchards four plots were laid out under as nearly uniform conditions as possible. These experiments may be considered duplicates in all respects other than in the amount of nitrate applied. In orchard No. 1 5.6 pounds per tree formed the basis of the work, and in orchard No. 2, 6.7. Plots No 1 in both cases received their fertilizer in the form of crystals broadcasted around the tree. Plots No. 2, in the form of a solution sprayed on the ground around the tree. Plots No. 3, in the form of a solution sprayed both on the tree and on the ground. Plots No. 4, as will be noted from the chart, has never received any fertilizer and will hereafter be referred to as the check. The cost of these applications at normal prices, $60 per ton, would amount to approximately $10 per acre in the first case and about $15 in the other.

During the first year the applications by the different methods were not all made at the same time. This fact served one very important purpose. For instance, it was learned that applications made in early March exerted a marked influence beneficially during the entire season on both tree growth and fruit production. On the other hand, the applications made in May failed to exert any appreciable influence until nearly the close of the growing season. Consequently, taking advantage of this information the second applications were made in early March, 1915.

Orchard No.	Plat No.	Pounds Per Tree		Treatment	Yields Loose Boxes				Terminal Growth Inches	
		1914	1915	1916	1914	1915	1916	Av.	1914 - 15	1916
1	1	5.6	5.6	Clover manure	4.1	8.1	13.0	8.4	15.2	20.1
	2	5.6	5.6	Clover manure	0.1	8.5	14.8	7.8	11.4	17.1
	3	5.6	5.6	Clover manure	0.2	6.0	9.6	5.3	13.9	16.1
	4	No Fertilizer		Clover manure	0.2	0.3	8.8	3.1	6.9	19.9
2	1	6.75	6.75	Sod	1.9	10.0	14.8	8.9	8.4	15.4
	2	6.75	6.75	Sod	2.3	9.9	15.5	9.2	10.3	8.4
	3	6.75	6.75	Sod	9.8	10.1	15.7	11.8	10.9	14.7
	4	No Fertilizer		Sod	2.1	0.9	5.7	2.9	6.6	5.2

Now, just a word regarding the general care given these orchards to date, because that is an important part of the program. Orchard

No. 1 received its first irrigation in 1914. It was clean cultivated in the early season and seeded to clover and a good stand secured. In 1915 this shade crop was pastured by hogs and young cattle. In early spring, 1916, this crop with its manurial content was turned under. Orchard No. 2 was clean cultivated during the early season of 1914 and later seeded to a mixture of clover and alfalfa. A good stand was also secured in this case. In 1915 this orchard received its first application of irrigation. The orchard is still in sod.

Now, I believe I have given sufficient introduction to these experiments and the conditions prevailing to discuss results. Both of these orchards were decidedly unproductive for a number of years. The results show that no matter in what form nitrate of soda is applied that it exerts a marked influence beneficially to the trees in question. If there were any practical differences as between the different methods of application those facts were not established by any of the careful methods of checking up employed. The results were almost immediate. All of the fertilized trees became green and vigorous and yielded heavily in marked contrast to the unfertilized nearby.

Let us be more specific and discuss yields. The chart shows this clearly and graphically. The yields per tree on a loose box basis for the three fertilized plats in orchard No. 1 for 1914 are as follows: 4.1, .1, .2, versus .2 for the check. In orchard No. 2 the yields for the fertilized plats run as follows: 1.9, 2.3, 9.8, versus 2.1 boxes for the check. It is admitted that these yields are poor and that the results are somewhat inconsistent, but it must be remembered that both of these orchards were badly run down, that some irregularities with reference to time of application existed during the first year and further that no irrigation was given orchard No. 2 for that year. Turn now to 1915. The three fertilized plots in orchard No. 1 give yields per tree as follows: 8.1, 8.5, 6.0, versus .3 of a box for the check. Here we have an average increase of about seven boxes per tree. Next, turn to orchard No. 2 for last year. The fertilized plots give yields as follows: 10.0, 9.9, 10.1, versus only .9 of a box, an average increase of about nine boxes per tree, or about 1,000 per cent.

Another important feature of this work considers the character of blossoms and the percentages of fruit set. On all the plots receiving nitrate of soda the number borne to the spur was considerably more than on the checks. They were also much larger and more highly colored. The few blossoms appearing on the check plots were not only small in comparison, but almost devoid of color. Many of the buds did not open. In both orchards percentages in regard to the set of fruit were taken both in June and again at picking time. Blossoms retaining at least one fruit each were credited with 100 per cent set. With this in mind turn to orchard No. 2 for 1915. Figures show that the fertilized plots in June retained between 70 and 80 per cent of all their fruit as against only 35 per cent for the check. During the remainder of the growing season these percentages were reduced approximately one-half. However, the ratio I have given you, two to one, remained constant during the entire growing season.

The grower of a fancy Spitzenberg realizes that it is necessary to produce fruit of good size. He appreciates that the trade is willing to make some concessions as far as color is concerned providing sizes do not run below 138 to 150 to the box. Beyond that point it is necessary to secure about 90 per cent red color in order to pass muster as first-class fruit. With this point in mind let us again turn to orchard No. 2 for 1915. For this work the fruit was graded to three different sizes: 175 to 150 to the box, 112 to 138, and 100 or larger. These may be classed as small, medium and large. It is significant that the check showed as high as 76 per cent of all its fruits running as small, or smaller than 150 to the box, versus only 18 per cent for the fertilized plots. On the other hand the fertilized plots returned an average of about 50 per cent large fruit versus only 5 per cent for the check. Here we have two extremes of undesirability. High percentages of small fruit on the one hand and large fruit on the other. However, this last feature is not so serious when it is learned that all of the over-sized and under-colored specimens from the fertilized plats might have been thrown away and still the balance would have been vastly, yes, about six or seven to one, in favor of the fertilized plats.

Let us refer briefly to vigor of tree. Here again, figures bring out a good strong contrast. In orchard No. 2 for 1915 there was an abundance of dark green vigorous foliage on all of the fertilized plats in marked contrast to the leaves on the check. Possibly it may be said that leaf development was slightly excessive in order to insure the best color of fruit, but here is the point I wish to show. The fertilized leaves averaged 2.8 inches long, or an increase of 24 per cent. They were also 7 per cent wider. These figures also substantially represent the figures secured in orchard No. 1 for the same year and also for orchard No. 2 for 1916.

Again, notice terminal growth. The chart shows the growth in inches on an annual basis of 1914 and 1915. It shows unmistakably which way the wind is blowing. These figures are important as they indicate quite closely the general vigor of tree. The figures for the fertilized plots for orchard No. 1 are as follows: 15.2, 11.4, 12.9 inches respectively, versus only 6.9 inches for the check. In orchard No. 2 the figures run as follows: 8.4, 10.3, 10.9 inches, versus only 6.6 for the check. An average growth of from ten to fifteen inches under these circumstances is admittedly good.

I believe that we may now well turn to results for 1916. Recall again, please, that no fertilizer was applied this year. We have seen what the influence of this fertilizer is. It is also apparent that during the past two years it has been applied sufficiently often and in as large amounts as we may safely do so. The question uppermost in our minds this year was: How long may the beneficial effects noted for the first two years be expected to last? Here we have a quick acting fertilizer and owing to its greatly soluble nature it is assumed that none of that applied in 1914 or 1915 would hold over in the soil to influence the action of the soil for 1916. It was also assumed that owing to the greatly improved physical condition of the fertilized trees that the beneficial effects would be lasting for some time and what we wished to determine was to what extent this might be so.

In this respect we were not in the slightest disappointed. All of the fertilized trees came up to our fondest expectations. In orchard No. 2 there was a uniform blossoming on all of the plats. Notes taken this year closely approximated those of former years. Again turn to terminal growth. We have seen the average for the first two years. Notice that of 1916 as given in inches. They are as follows: 15.4, 8.4, 14.7 respectively for the fertilized plats, versus only 5.2 inches for the check. Note that the fertilized average is improving and that the check continues to decline.

Next, notice yields in this orchard. The fertilized plots give yields as follows: 14.8, 15.5, 15.7 boxes respectively, versus only 5.7 boxes for the check. Even were we to take on a three year average the poor results for 1914, which would hardly be fair owing to the fact that no irrigation was given and that irregularity regarding application of fertilizer existed, we would still have averages as follows: 8.9, 9.2, 11.8 for the fertilized plots, versus only 2.9 boxes for the check. Surely these are results we are all pleased to see.

Turn once more to orchard No. 1. Here, as will be noted, yields are good but strong contrasts are lacking. The difference between the fertilized plots and the check is not large but it does stand out strong on a three year average. Note also that the terminal growth of 19.9 inches on the check slightly exceeds two of the fertilized plots and is approximately equal to the third. What has been the cause? It is easy to dismiss the subject by saying that trees which have produced little fruit for a number of years should begin to show form pretty soon. But in my judgment that explanation is somewhat unsatisfactory because I believe we have a better one. It is also worthy of note that unfertilized Newtowns of same age in this same experiment about which I have said nothing as yet, produced on an average of 13.3 boxes per tree, only one-half box behind the fertilized trees. I have made a careful study of this orchard during this past summer when differences are most marked and in a general way can say that there is little to distinguish between the different plats except the stakes marking the same.

It will be recalled that this orchard was seeded to clover in 1914 and a good stand secured, that it was pastured by hogs and cattle in 1915 and this cover crop turned under in 1916. I take it that owing to former soil conditions and long years of clean cultivation given, which destroyed practically all of the organic matter of the soil, that the re-introduction of organic matter in large quantities largely explains the apparent inconsistency between results in orchard No. 1 and orchard No. 2.

Looking at the subject from an unprejudiced standpoint these are the facts we want to know, because there is an abundance of just such information going to waste all around us and should become common knowledge. Oftentimes an experimenter starts out to prove a definite preconceived idea regarding orchard fertilization and if his vision is sufficiently narrow and his determination sufficiently great he sually collects enough data to prove his case. In my judgment these facts relating to orchard No. 1 in no wise minimize the importance of results secured in orchard No. 2 or in orchard No. 1 as far as that is concerned. They simply throw additional light upon the whole subject of orchard fertilization and compel us to look at the problem not from the standpoint of commercial fertilizers alone, but also from the viewpoint of many other factors affecting the soil and which enter into the production of high-class fruit.

What are the conclusions we may safely draw for the average grower from work of this kind. First, I would say reservedly, "Don't be too enthusiastic." Now, that should mean a great deal to a body of trained horticulturists such as you. There is a very delicate balance existing in the tree between fruit production on the one hand and wood production on the other. Either, pushed to extremes, is accompanied by failure. It is obvious from the figures herewith presented that it is easily possible to overdo the whole thing.

Again, I have explained what were the governing factors which led up to the problems I have just discussed. Recall that owing to the years of clean cultivation given organic matter was practically depleted in the soil. The logical and sensible thing to do under these circumstances is to restore this organic matter as quickly as possible and thereafter maintain it in sufficient quantities to prevent a recurrence of the trouble. This fact should be constantly uppermost in your mind, that while nitrate of soda can very greatly improve the physical condition of the tree it cannot do the same thing for the soil. The greatest benefit to be derived from its use lies in the fact that it is a quick acting fertilizer and enables the grower to tide over periods when the demands upon the soil are sufficient to justify its use. That it is a cheap fertilizer in normal times is also another factor of great importance, but in my judgment it will never be able to compete with that form of nitrogen which may be fixed and maintained in the soil by the judicious use of shade and cover crops. That it has been a great factor in covering a present need is obvious. Just what part it will play in a definite rotation in this valley, should one become established, is a matter of conjecture and time only can tell. In my judgment it will always play an important factor in high-class fruit production in the Hood River Valley and possibly elsewhere, where similar conditions prevail.

The meeting adjourned until 9:30 the next morning.

TUESDAY, DECEMBER 12, 1916.

The meeting was called to order Tuesday morning at 9:45 o'clock by Secretary C. D. Minton.

COMMUNICATION FROM R. C. WASHBURN, PRESIDENT

Table Rock Orchard, Cenral Point, Oregon, December 11, 1916.

C. D. Minton,
Secretary Oregon Horticultural Society, Hood River, Oregon.

Dear Mr. Minton: I regret to say that at the last moment I find it impossible to attend the annual meeting of the Society at Hood River. I wish to assure you that my sorrow is very sincere, for I know how interesting and profitable the sessions can be made. It is also a great disappointment that I could not have presided for the third time over the deliberations of fellow orchardists and thus have retired from the office of president with flying colors.

Lest there be an awkward pause in the proceedings when that part of the program is reached which calls for the "address by the president," I have hurriedly thrown together a few brief observations which you are at liberty to read to them with my blessing and with many thanks for the honor bestowed on me during the last two years. Very sincerely,

R. C. WASHBURN.

President Washburn being absent, his address was read by Secretary C. D. Minton.

ADDRESS OF PRESIDENT WASHBURN

I believe we have touched low water mark in the fruit industry of the Pacific Northwest, and that at last the tide is turning.

I do not think we have reached anything approaching a satisfactory solution of our greatest problem—that of marketing—but we have made progress.

I believe the ills of the industry are due directly or indirectly to archiac marketing methods.

With proper marketing there should be reasonable profits. With reasonable profits there will be sufficient funds for thorough and efficient orchard operation.

I do not think the orchardists of the Northwest are raising better fruit than ever before—perhaps not as good, as a whole—but if they are not, it is because a succession of lean years has, in many instances, reduced if not exhausted capital, dampened ardor and resulted in less careful and up-to-date orcharding.

The orchardist knows more about practical, economic fruit growing than ever before.

Because of enforced personal attention, by reason of research work of state institutions, through the investigations of county agents, and the work of experiment stations, the orchardist is better able to grapple with the physical side of fruit raising than at any time in the history of the industry.

He knows more about pruning, spraying, thinning, cultivation, cover crops, irrigation and the control of fungus and pest. And in nine cases out of ten, if he has not applied that knowledge it has been because he has not had the financial means with which to do it. I do not think there is today a pest, plight or problem that can not be met successfully, if the necessary financial resources are available. I believe that frost, blight, scale, moth, scab and the countless other afflictions that beset us can be controlled or practically eradicated by methods either known or in an advanced stage of experimentation.

But all this costs money—for materials, for equipment, for men. It is essential, therefore, that the orchardist realize enough from his fruit to provide this necessary money, if he is to continue to produce an article up to the high standard that has made the Pacific Northwest famous.

I do not believe he will do this, year in, year out, under the present system of marketing.

Some of the evils of sale methods are gradually being eliminated, but I do not believe there will be an abundant and abiding prosperity in the business of fruit growing until the man who raises the apple is brought nearer commercially to the man who eats it.

You can not irrigate a piece of land to the best advantage if the wooden flume between the head gate and the land to be irrigated leaks at every joint.

The fruit grower can not secure that to which in all fairness he is entitled, so long as tribute is withdrawn, appropriated, swiped, raked off, copped or stolen through a long line of middlemen who stand between the orchard and the consumer's table.

Under ordinary conditions, the consumer of fine fruit has year after year been paying about the same price for his supply, and it has mattered little whether the country's output has been twenty million barrels or sixty million barrels.

There is scarcely a commodity that pays so much in the way of charges, commissions and duplicated profits to Tom, Dick and Harry as does the apple in its travels from the producer to the ultimate consumer.

Until it is recognized that some of these toll takers are the deceased vermiform appendices of the industry and must be cut out, the fruit grower will not come into what is rightfully his own.

Progress has been made in correcting some of the marketing errors of the past. Consignment is becoming more and more unpopular, and instances of shipping by this hazardous method, with resulting low prices, rejections, allowances or red ink, are becoming fewer and fewer.

The distribution is wider every year and gluts would rapidly become a thing of the past, if there was less independent shipping.

Through the efforts of the various fruit associations, selling agencies and the federal department of markets there is less of the old time dumping and blind selling, and every year Northwestern fruit is put into new markets that never before bought it or even knew of it.

Still wider and more general selling can be effected with systematic and persistent advertising and exploitation. This means more expense and another charge on every box.

Wider selling may have a tendency to prevent an era of low prices that ordinarily might be warranted by increased production, but it is not likely, under the present system, to bring to the grower those steady returns that mean a reasonable profit every year.

If the present method of distribution has not brought annual profits, it is not likely to do it by merely broadening the area of its operation.

I believe the grower will enjoy those profits only by securing a larger share of the retail price than he has been getting heretofore.

He will secure these only by a systematic distribution that brings the fruit grower nearer to the fruit eater and reduces the size of the bucket brigade of middlemen through which the fruit now passes.

The orchardists of the Pacific Northwest can make a record every year for raising fruit, in the matter of both quality and quantity. But they must be reasonably paid for doing it. They will be reasonably paid only by better marketing.

I believe, therefore, that the question of marketing is the most vital before the orchardists today and that it overshadows any and all other questions awaiting solution.

We can handle the business efficiently at this end, if it is handled right at the other end.

Mr. Bateham gave a brief address on the subject of "Needed Legislation."

NEEDED LEGISLATION

By A. P. Bateham

The topic assigned to me is "Needed Legislation" but permit me to attach an interrogation mark to the subject title.

Many people seem to think that legislation is a cure-all for every trouble, but it at least needs to be preceded by a thorough course of education that will bring about a full understanding of the matter and thereby crystalize public sentiment. By that time many proposals that were launched with a hurrah will have been withdrawn as unnecessary or otherwise, while some will obtain a firm standing with public favor.

Our president, Colonel Washburn, mentioned the paramount necessity of giving careful attention to the marketing of our products.

I think all realize this in a way, but there are many ways of approaching the subject. Many practical, business-minded growers strive to build up and strengthen their marketing machinery while reaching out in a co-operative way with others to correct abuses and improve distribution methods. Others would hurdle over all the difficulties nearest to them and demand that the state or nation shall step in and perform all marketing functions for them.

States to the east and south of us have blossomed out with legislation creating market commissions and they have gotten no farther along with the job than the city council of Portland has, that is, established market stalls. Other states have experimented on this line too, but none appear to have made any notable success.

Oregon's marketing problems are large and only in small degree confined to the state.. The federal government, through the Office of Markets, is continuing its exhaustive study of the subject and with its trained force of experts is trying to determine the ways and means in which it can serve the producers to advantage.

They afforded a very distinct service to Northwestern apple growers this year and it appears that results might have proved much more valuable if there had been a larger measure of co-operation from growers. It appears to me that we would do better to cordially work with the federal marketing agency and give it a full show to help us in our marketing, rather than start a small state experiment.

If there was to be a state market commissioner, probably his most useful activity would be to standardize commercial offerings of fruit and produce. The infinite confusion and ignorance now existing in the grade standards of all kinds of products is a serious clog in their exchange and sale.

Experience indicates that it is most difficult for Oregon to attract Washington on such a subject and equally so for Washington to approach Oregon, but through such a neutral agency as the federal office of markets, why cannot we hope for practical advance in uniform grades and packages that will eventually become nation wide.

This Society has consistently recorded itself for many years as favoring such uniform horticultural laws and practices as will conduce to a better interchange of nursery and farm products both intra and inter-state. To secure such legislation in Oregon alone would not suffice to secure maximum benefits.

Continued agitation and a more widespread public sentiment is needed so that adjacent states will recognize the mutual benefits to be derived. Members of this Society can give real help on this.

Our secretary's report yesterday touched on car shortage and demurrage as matters that we should consider here, but just today announcement is made in the press that both our state railroad commission and the interstate railroad commission have made regulations on the subjects, so let us hope that they will prove effective.

Your committee on legislation had a meeting early in the year which voiced conservatism and nothing was suggested that was radically different from what has been repeatedly discussed and approved by this Society.

It has seemed entirely impracticable to secure attendance for another meeting during the last few months, so I submit these few remarks in lieu of a formal report.

Mr. Minton nominated Mr. Carter as permanent chairman for the remainder of the meeting. Motion carried.

Chairman: I assure you gentlemen and ladies that I am disappointed in finding that Persident Washburn is not here today; but I am glad to see that we have a pretty good representation of men from abroad. If we haven't the president here we may be able to make it interesting for those of you who are here. I am glad to see some new faces here this morning, some of them that have been in the habit of attending our association in past years. I regret not to see more of the growers of Hood River valley. This morning we have had a light attendance of our growers who should be here. Now gentlemen, we will try and make the very best of the time we can. We want to make this meeting a success. If there is any discussion regarding needed legislation we will talk it over now. I am sure the line of what has been given is forcible.

Professor Bouquet gave report of committee on consolidation of vegetable growers of the state of Oregon with the Horticultural Society. Also read paper on "Satisfactory Gardening."

REPORT OF COMMITTEE ON AFFILIATION OF VEGETABLE GARDENERS IN STATE HORTICULTURAL SOCIETY

By A. G. B. Bouquet

Ladies and Gentlemen: I was appointed as chairman of the committee at the meeting at Corvallis last November, to investigate the possibility of the affiliation of the Vegetable Gardeners of the state with the Oregon State Horticultural Society.

I am frank to state that up to the present time we have had no meeting of this committee, but I have endeavored to consult quite a number of the leading vegetable gardeners concerning their attitude toward this proposition. A circular letter was sent to these growers requesting them to give vent to their expressions as regards the interest that they might take in a section of vegetable gardening of the State Horticultural Society. A good many growers seemed to believe that this was a very good proposition, and there were but very few that dissented from the possible success of this arrangement.

There are several things to be considered, however, in this connection. The vegetable growers have their own individual and peculiar interests, just as the fruit men. They are quite widely separated in these interests, just as the fruit men are, also. For instance, the vegetable growers are segregated into those producing celery, onions, cabbage, asparagus, cauliflower, etc., while the fruit men likewise are separated into those who are producing apples, pears, peaches, prunes, loganberries, etc. In other words, the interests of vegetable gardeners are different in different areas. This variation in conditions in different areas is quite a factor in the possible success or failure of a section of the Society.

Also the distance to attend meetings and the expense incurred thereby is a factor which must be considered. I think growers would travel thirty or fifty miles or so for a meeting in which a section of the State Horticultural Society was devoted solely to vegetable gardening, but I do not think they would travel 100 or 200 or 250 miles in order to attend that meeting, even though it only came once a year.

I am of the opinion that the vegetable men need and want some mutual organization in which they can discuss the problems relative to their business, and I think the State Horticultural Society is a very good medium to give them a start along this line. It will be necessary, I am sure, to have a section of this Society which will be devoted solely to vegetable gardening, in order that all of the time spent in the society's meeting might be profitably devoted to this particular subject.

It might also be possible to divide the State Horticultural Society into an organization with three divisions, one in eastern Oregon dealing with problems of that section; one dealing with problems in the Willamette valley, to possibly a point located near Cottage Grove; and another section dealing with those problems of Southern Oregon. It would not be necessary then for these different members to travel a very long distance to attend the meeting of their particular section, and the conditions would be such as would be well known to them, and very similar to those under which they all were working.

We have been in touch with a goodly number of vegetable gardeners for three or four years, and I think that matters will come to a head very shortly, and that something definite will be done, so that the interests of these growers will be lookel after, and that meetings will be held for the mutual benefit of all interetsed in this phase of horticulture.

THE SATISFACTORY VEGETABLE GARDEN ON THE FRUIT FARM.

By A. G. B. Bouquet

With the hurry and scurry of every-day activities on the fruit farm, the vegetable garden, as a legitimate part of the farm, very often suffers from lack of attention, or in many cases it is entirely an unknown quantity. In still other cases it has fallen to the lot of the housewife to also do a large part of the vegetable gardening, in her attempt to produce some fresh produce that she can prepare for the table for the hard working fruit grower. It seems almost unnecessary to emphasize that this is somewhat of an unreasonable proposition in view of the amount of work that the average housewife on the farm must necessarily do from day to day.

It has always been my impression, gained by observation and experience, that the average farmer realizes to a small degree the producing power and money value of a small area of land cultivated to vegetables. Indeed, on a great many farms it is the last part of the farm that receives attention, the farmer laboring under the idea, presumably, that either the vegetables will grow anyway without very much care or that there was not enough return made in the time invested in the care of the same.

I well remember a few years ago my first attempt to interest and influence the average Hood River Valley farmer and fruit grower in the value of the garden area. These attempts seemed to be crude and rather wasted on the desert air, but succeeding years have showed, I believe, that at least some of the seed may have taken root and while not producing a hundred-fold, have provided some examples which were later to influence others. It is not so very long ago since the situation was when many of these fruit growers in this section as well as in others were purchasing in liberal quantities their every-day necessities, among them many vegetables. Not a few crates of the most common kind of vegetable produce found their way down this valley and other valleys to be finally disposed of to some farmer.

My impression is that this condition has somewhat changed at the present time, and I am led to believe so partly by the increased interest taken in some of the meetings at which I have spoken, and the statements made to me by a goodly number of folk who have related to me their successful experiences, as well as their difficulties in the farming of their vegetable lands. Others, possibly, have made feeble efforts and have had very little success. These are often ready to condemn the feasibility and value of the garden area, offering as an excuse that it does not pay to cultivate the land to these kinds of crops. It should not, however, take very many years to convert these people to the true light of conditions.

I believe that no farmer can afford to so specialize or be so wrapped up in one crop or another that he neglects to produce some of the daily necessities of life. For economy and health he should have a vegetable garden, and a satisfactory one, which returns to him a profitable interest on his time, labor, and money invested. That is the problem, and the basis of my discussion.

Many vegetable garden areas on the farm are too large. They cover too much ground, and one has to cultivate and attend to an undue amount of soil. I would suggest no larger an area, outside of the potato acreage, than a plot one hundred by one hundred and fifty, or even fifty by one hundred and fifty, laid out for horse cultivation, so that there is the greatest economy in the working of the land.

Many gardens begin to be failures almost before they are started, because they are attacked suddenly, on the spur of the moment, without any plan, or much forethought. A farmer should have a plan of work and then work his plan. It doesn't have to be elaborate or intricate, but it is a guide to operations, and I assure you it is as good and as valuable as an architect's plan in building a house. The Oregon Agricultural College would be glad to submit to farmers suggestive plans for their home vegetable garden. By writing to the Department of Vegetable Gardening these may be obtained. I have seen hundreds of home gardens with altogether too much of one variety planted, and not enough of another. Similarly, there are many gardens where this or that vegetable runs out, and there is a situation of too much at one time and nothing at another time. This can be very largely avoided by planning the planting and making them timely and opportune.

I recommend a wider variety of crops to be grown in the farm garden, without necessarily entailing much added labor or expense. By this I wish to encourage a larger variety and a more satisfactory variety of vegetables produced and eaten. Variety is the spice of life, and no farmer should be without some of the more delicious vegetables that the city folks have that can be produced at least on the average farm. In this connection we would do well to pay more attention to vegetables and their adaptability to seasons of the year. By this I mean that it is entirely possible to lengthen the production and the value of the garden by planting crops for the fall season, the winter season, and for early spring. Such vegetables as Swiss chard, Scotch kale, brussels sprouts, spinach, broccoli, Danish cabbage, and head lettuce, ought to be grown more, for these are all hardy vegetables and mature at a time when other goods are gone. Too many gardens are over by the time the first cold snap appears.

I recommend also a careful and discreet choice of varieties of each vegetable. Our seed catalogs are loaded with the same, but the wise gardener picks the best stuff from experience or suggestion, the choice being made on the basis of quality, adaptability to season, and maturity. To illustrate, for a hardy fall and winter head lettuce, New York is the best. It is not so adaptable in the summer time. There should be at least two or three varieties of sweet corn planted, some for early, some for mid-season, and some for late. For instance, Portland Market for early, Golden Bantam for second early, and Howling Mob to be planted for the later season. Successional plantings of these various varieties would no doubt suffice. My best corn this year was planted July 6th to the 12th, and was in fine condition toward the middle of September. The proper choice of varieties of every vegetable makes a big difference in the success or failure of the home vegetable garden.

Satisfactory vegetable gardens are never grown from indiscriminately bought seed. On the contrary, it pays to get the best, of the highest quality. This should be ordered early in January, before stocks begin to get low, and possible substitutions are made. Ordinarily, I do not think it is necessary for any gardener to get "stung," so to speak, on his seed purchasing, unless he buys with his eyes shut, and with but little care. Acclimated Oregon vegetable seed is a big factor in our gardening, and will be more so in successive years. Keep your money in the state and patronize home industry. Don't send it to the Middle West or East, unless you have to. There is a lot of good vegetable seed grown here in the state, and offered for sale by our seedsmen. I think that the fruit growers should be encouraged to practice more than they do the purchasing of Oregon grown seed, and therefore encourage the industry in the state.

One of the essential features of a satisfactory garden is the equipment, which is efficient, but not expensive, of some glass sashes, a wooden frame, some horse manure, providing a temperature of 120 to 140 degrees Fahr., and some dry straw or burlap, in which to produce in the spring the young vegetables for later setting in the garden; also in which to have head lettuce and radishes growing out of season months of the year; also in which to force a little early rhubarb, possible; in which also to grow melons, eggplants, and peppers in districts where these otherwise might fail to mature. All this could be purchased for the sum of $7.50 or $8.00 and it would last ten years or more. The average farmer makes little use of the hotbed or the cold frame, and this is the essential feature of our home gardens, at least in the Willamette Valley, that is lacking for want of the knowledge of the value and use of the same by the average farmer. There are but few Thanksgivings and Christmases that I do not cut a few heads of New York lettuce grown in the frames for my dinner, while other folks are spending picture show money for theirs. In districts such as the Hood River Valley, where in some parts the growing season is not long, and the average daily and night temperature is not high, a great deal of value for plant and crop protection is the small forcing hill, or individual cold frame. There are many styles of these that can be used, but they all have the same principle and use. Place these at night over your tomato plants, your eggplants, your pepper plants, your melon and cucumber hills, and your garden will not succumb to the unusual cold nights. Considerable use of these is made by gardeners in the vicinity of The Dalles, for plant protection, as a means of increasing the earliness of their crops. It will be necessary also in this district to use added protection in the form of straw mats or dry straw, or old carpet material, in order to keep the cold from penetrating the glass sash.

The perennial vegetables, such as asparagus, and rhubarb, are important in the home garden, because they are early, easily cared for, and permanent. Fifty to seventy-five plants of asparagus, and ten to twenty rhubarb plants, will furnish a sufficiency for the average family.

One of the most widely eaten vegetable is head lettuce. It is likewise found but little in the average home garden during the entire season. Lettuce that is solid, sweet, and tender, can be grown in most sections of the state, and in many sections nine and ten months out of the year. Success in growing this vegetable depends upon the right selection of varieties, timely applications of water, and plenty of manure in the soil. The average farmer can also have a good supply of lettuce grown in the cold frames during the late fall and early winter, and also in the early spring before the outdoor crop begins to head.

The equipment of four glass sashes in a cold frame, together with the lumber of the frame itself, can be paid for by growing one crop of lettuce under these sashes. In a frame 12 feet long and 6 feet wide, 144 lettuce plants can be planted. These should sell at least at 50 cents a dozen, which would have a total of $6.00, which would go quite a long ways towards paying for the original cost of the equipment. There should be no need for the fruit grower to buy his Thanksgiving celery, and oftentimes his Christmas celery. He can grow it out of doors, partially blanch it, and when cold weather comes, store it in the barn or shed, which is reasonably frost proof. This is especially possible in districts where the falls are cool and where there is not so much moisture as there is in the western part of Oregon.

Storage is a feature of vegetable gardening that is very important. Various vegetables can be successfully stored for winter use, such as cabbage, celery, roots of all kinds, squash, pumpkins, and onions, and these, together with the canned products, which are usually put up, such as string beans, tomatoes, asparagus, sweet corn, etc., should make things decidedly easier for the cooks during the winter time, and furnish a more pleasant variety for the farmer.

I fully realize the difficulties in vegetable gardening, and in endeavoring to control insects and disease. Yet at the same time there are many of these that can be controlled by a discreet use of the right measures at the correct time. It is unnecessary for a gardener to lose a number of his plants from injury by a certain insect, while others are relatively more difficult to successfully control. Truck gardeners, as well as fruit growers who are growing vegetables, can always obtain some very helpful information by writing to the Department of Entomology of the Oregon Agricultural College.

In regard to the fertilization of the home vegetable garden area, I would say that it would pay you to save from your own stock, your horses or cows, enough manure so that you can put on 250 pounds per square rod of garden area. If this is impossible, use 20 pounds of lime, or one-half that amount of land plaster, or five pounds of complete commercial fertilizer to the same area.

There are many other important factors of successful vegetable gardening that I might emphasize. One of these is the necessity of some regular or systematic time being devoted to the vegetable garden. If this part of the farm is given its due care, it will show a greater balance of net receipts for the given amount of area cultivated than almost any other part of the farm which is tilled.

Space and time forbid my going into details to any further extent. I would like, before closing, however, to emphasize to the fruit grower and members of the society here present that the Vegetable Gardening Section of the Division of Horticulture, of the Oregon Agricultural College, is anxious to serve the fruit growers of the state as far as possible by assisting them in the cultivation of their areas devoted to vegetable gardening. Any communication I receive will be very carefully considered and as much assistance as possible rendered.

Chairman: Now, I have no doubt there are a good many here who have some questions to ask about gardening and about the method of raising and what to plant. I would like to ask Mr. Bouquet if he could give us the name of some book that would cover the subject in a general way so we can study up during the winter months.

Mr. Bouquet: I think the best thing that could be done would be to get some of the pamphlets issued by the college. I don't say that because I wrote the pamphlets myself. The books which you might buy are not local. We endeavor to meet your problems in this pamphlet. You have to vary this, however, according to your own conditions. R. L. Watts on Gardening is a good book for $1.50. It is a good book for any library but I believe the pamphlets would be better. I simply want to say that I know of two cases of persons in Hood River that have planted gardens and followed the directions given by the O. A. C. and they have very fine gardens. They had no knowledge whatever except the instructions sent them.

Mr. Brownlee: Some people have difficulties in having head lettuce to head. I would like to know if there is any knack or trick to that.

Mr. Bouquet: There is difficulty in getting it to head in the summer time but there should be no difficulty in making it head in late July, August, and through September, and October providing they raise the right varieties. The best all-round variety would be the New

York for spring and fall and for summer would be a choice of one or two such as Hansom or Salamander but it is a question of varieties. Some people think that lettuce will not head unless it is transplanted but if they simply consider the question of variety they have the proposition just about cinched. You have to have plenty of manure and water at an opportune time. It is largely a matter of variety and buying good seed and not buying trash with a pretty picture on the outside of it and seed that is worthless on the inside.

Chairman: I haven't succeeded in raising celery for autumn use. I don't know how to bank it up to keep it from turning brown or rusting. The rain runs down beside the stalks and they rust. I have not succeeded very well.

Mr. Bouquet: Do you find any spots on the leaves?

Chairman: No, I do not find any spots. I use soil to bank it.

Mr. Bouquet: If you would use boards instead of soil, and then use soil later on when the weather is dryer and colder you will have more success.

Chairman: Is it as good quality banked with boards as with soil?

Mr. Bouquet: Celery is shipped out of the state banked by boards and sold and there is no question as to quality.

Chairman: The best celery I have ever had was banked with soil. As a rule it lacks that crispness when it is banked with boards that it has when banked in soil.

Mr. Bouquet: If any of the fruit growers of Hood River have any doubt as to packing the celery with boards, let them drop off at Troutdale and see Mr. ——— who ships to Butte and other places. All his is banked by boards. It is some of the finest grown in the Union. Now I think, Mr. Carter, if you use the boards later on when the weather is colder you will have no rust.

Mr. Flagner: I live on the west side and the soil is light and I can't get celery to grow that is very tender and crisp in the outside stalks, the rest of it is small, and I take all the care of it I know how.

Mr. Bouquet: Have you used any nitrate of soda?

Mr. Flagner: I did but I can't see any effect. When do you put it on?

Mr. Bouquet: I put it on at successive intervals of two or three weeks—if you use manure until it is up eight or ten inches. I would like to suggest next year that you plant celery level as you would strawberries, if it is early celery, and apply your nitrate of soda and use together with that a little super phosphate, but don't apply very much, just try a little out. There are wonderful facilities for storing vegetables in this valley. You could supply Portland with cabbage and root crops and celery if you would only raise enough for your own use and for market.

Member: I would like to say about cabbage, we have never been able to raise cabbage. I don't know of anyone except in the lower lands where they have heavier soils.

Another member: We have to practically make our soil.

Mrs. Frazier: I have a place on the west side and this year I sold fourteen sacks of cabbage from my garden and gave four sacks away and reserved enough for my winter use. My garden in Hood River valley in the last three years has furnished me with all my winter wants and I have enough to last me until garden time again next year. I have tried everything that I can think of excepting egg plant and so far as knowing how to do it, I conducted a private experiment agency and the only vegetables that I feel I have not been very successful with are Brussel sprouts and brocolli. I suppose there is something about the raising of them that I don't know. Cabbage will grow on the west side.

Mr. Bouquet: If there is anybody here who wants to do any brief—that is no elaborate—experimental work I would be very glad to give any assistance possible in even sending the seed of different varieties and try them out.

Member: Mr. Bouquet spoke of storage. It is an extremely interesting matter in my district. We have no success with storage during the winter and would like to know if Mr. Bouquet has any suggestion to make as to the most economical and best manner of making it a success.

Mr. Bouquet: Where you can't store them outside it would be necessary to have indoor storage.

Member: What I mean, I am getting ready now to build a root cellar, and I would like suggestions as to the best way of making it.

Mr. Bouquet: It would be necessary to insulate the part where you are going to store the roots, make a double wall and then, too, I would store the roots practically on the same principle as outside.

Member: What is your method of insulation?

Mr. Bouquet: We use a double wall and protection of dirt and straw outside, nothing in the wall.

Chairman: I am very sure that this is interesting to all of us because of the fact we all eat so many things that come from the garden. I have never tried the New York head lettuce but I have tried the big Boston and we seldom have autumn weather that I can make it head. The heads do not form nice for head lettuce. I want to say one word regarding corn. I noticed that he named three varieties. I have tried several varieties of sweet corn but I have had the best success with the Golden Bantam. I plant it first in April just as soon as I think it will be safe from the early frost. I think I'll say that I take my chances and if I get my corn nipped I plant more later. The Bantam is hardy and enduring. I plant in April, get that off in August, then I plant about the first of June, unless we have had a very late spring. The last planting is in the last of June. I have planted the 6th of July and had very good corn. Last fall our corn planted on the 6th of July was frosted when it was just beginning to form, to be large enough to use but the frosts were unusually early. The Golden Bantam has served me a good purpose. I have used the Country Gentleman but the Golden Bantam is more tender. I used to use Black Mexican. It was my corn for twenty years but I found the Golden Bantam was much superior in tenderness. I have never tried the Howling Mob.

Mr. Bouquet: I am going to have you try the Portland Market.

Chairman: I would be glad to try it. What firm handles it?

Mr. Bouquet: All firms in Portland.

Chairman: I don't want to criticize what the professor said, but we have had some experience in buying seeds from the Willamette valley and also from outside. We have been deceived on some seeds that were bought in our own state. I believe in patronizing our own state but I have myself been fooled on some of the seed that I have gotten there and I remember that one professor from the college criticized the seed in Portland given out as not being true to name. Sometimes I do buy there and I would rather buy there, but I have been in the habit of buying from one old firm in the east that has given me good satisfaction.

Mr. Knowles: I want to add a little testimony to that seed buying. I commenced buying western seed when I came out here. For four years I bought practically all my seeds of Gill Brothers and I got just one package of inferior seed. I sent the package back and they sent me three packages in its stead.

Mr. Arnold: I took the short course at Corvallis three years ago. Prof. Bouquet spoke of Gill Brothers being reliable and he also spoke of the Portland Market as a good sweet corn. Each year I determined to buy my seed from Gill Brothers but was talked out of it. This year I broke away and bought of Gill Brothers and I never had such satisfactory seeds in my life and the advantage of buying from them is if they don't raise the seeds they know where they get them. This Portland Market is magnificent corn and I was glad to hear Professor Bouquet refer to it again. I hope it will be planted in Hood River valley.

Mr. Bouquet: I am glad to have you as one of my disciples.

Mr. Pomeroy: I want to say that I have planted the Portland Market corn for four years and we have always found it very satisfactory. We shipped sweet corn to Astoria and we planted several varieties, among them Golden Bantam and Portland Market. It is Portland Market that has been the favorite corn. It lasts longer and I believe is sweeter.

Mr. Bailey's talk was substituted for Professor Gardener's, as many of the fruit growers could not be present in the morning. Dr. Bailey spoke on "Raising and Marketing Brocolli."

THE BROCCOLI INDUSTRY IN OREGON

By Dr. C. H. Bailey, Roseburg, Oregon

Before going into the details of the cultural methods of broccoli growing, it would, perhaps, be pertinent to explain what broccoli is, as the word is not familiar to the majority of people. Broccoli is a hardy strain of cauliflower, and has been developed so that it will withstand a certain amount of frost, and seems to delight in the moist, cool winters that Oregon is noted for. Before the present European war more or less of the vegetable had been imported every year from Belgium, but not enough to make any impression on the market. Many varieties, or strains, of broccoli, are quoted by the various seed houses, especially those of England, France, Belgium and Sweden. In fact, one seed house in Paris has 125 varieties listed in their catalogue. For the conditions in Douglas county we have found an imported strain of the St. Valentine variety the most satisfactory. Whether that strain is adapted to all the varying conditions of the Pacific Northwest is a question that only experimental plantings will show.

To any one who contemplates planting broccoli either commercially or for their own private use, there are three "dont's" that are imperative to heed if one wants to become a successful grower of the vegetable. Don't plant poor seed. Don't sow your seed too thick in the seed bed, thereby having spindling, puny plants to transplant. Don't try to raise broccoli on land deficient especially in potash and nitrogen.

The first step in a successful crop of broccoli is the procuring of a clean strain of seed, imported seed having given the best results so far. From correspondence that I have had with seed growers I have learned that it is nothing unusual for a grower to use only from two to ten plants from an acre of broccoli for seed production, as the plant has a tendency to revert back in type that produces either a poor head or "flower," or to a type that produces no head at all, and at the picking season resembles a huge cabbage, but of soft structure. Nearly every grower of broccoli is familiar with this reversion of type, and the experienced planters can distinguish this type in their young plants, thereby saving having it transplanted into the fields.

If I were going to plant, say, four ounces of broccoli seed, I would use at least an acre of ground upon which to grow my plants. After the soil is in the finest condition possible to mark, and the soil should be like an onion bed, about the first of May sow your seed. After first marking off your ground so that the rows are at least thirty inches wide, and three feet is better. Many of the growers here use one or another of the garden drills and are successful with them. While I am the owner of one of the standard garden drills, it is not a success with me for sowing broccoli seed, for the seed varies considerably in size and clogs the drill more or less. My favorite method of planting the seed is to use one of those small pepper (tin) boxes that has a swivel top to shake out the pepper. By tying this pepper box to a broom handle and traveling up and down the rows, a close watch can be kept of the amount of seed used, thereby avoiding planting the seed too thickly. Perhaps a good distance for the seed is about fifteen seed to the foot of space. This will produce stalky, sturdy plants, an absolute essential in the growing of a successful crop of broccoli. After the seed has been dropped from the pepper box, it is my custom to go lightly over the rows with a rake to slightly cover the seed.

From the time the seed is planted until transplanting, which is in the neighborhood of July 1 for this section, there is nothing to do except to keep a good mulch in the seed bed, thinning and transplanting any of the seedlings that are being crowded in the rows.

From June 20 to any time in July is the transplanting season here, and another important "don't" that should be emphasized at this time is "don't" transplant your plants on to ground that has any standing water during the winter. The soil must absolutely be thoroughly drained, otherwise fungus diseases will show themselves, and instead of harvesting a crop of broccoli you will have only some rows of sickly yellow plants.

Don't try to grow a crop of broccoli on land that is not either naturally rich in plant food, or that has been enriched in some manner. In my broccoli gardens early as possible in February or March is broadcasted 800 pounds of commercial fertilizer that will give an analysis of 6½ per cent potash, 5 per cent phosphoric acid and 8 per cent of nitrogen. Besides this application of commercial fertilizer we try to give each field a slight dressing of barn yard manure to keep up the humus content of the soil. Broccoli is a gross feeder, in fact, harder even than the thousand headed kale, as the latter requires more nitrogen to grow the immense amount of foliage on the kale plant, while the broccoli plant not only requires the nitrogen to develop its large foliage system, but requires large quantities of potash and phosphoric acid to develop the "flower."

We will assume, however, that the land for transplanting the seedlings is rich in plant food, is well drained, has been thoroughly plowed and harrowed so that by the latter part of June it is a perfect seed bed, well stored with moisture, for the seedling must be kept growing throughout the summer and early fall, and, as the plant is largely composed of water it is necessary to have retained plenty of water by cultivation after each rain. One interesting fact is that the plants thrive better during the hot months of July, August and September by obtaining their moisture from the soil rather than by irrigation.

Last summer, which was an exceptionally dry one with us here in the Umpqua Valley, I had access to two one-acre plats of broccoli. Both were on identically the same soil, both had had the same treatment of commercial fertilizer, and one of the gardens was watered with the Skinner system of overhead irrigation, which was used several times during the summer and followed by thorough cultivation. In the fall, however, and during the entire summer, for that matter, the tract that was receiving good cultivation, but no water from any sort of irrigation system, looked better and thriftier than the garden that was under irrigation, and this was during a summer when we were deficient nearly 30 per cent in our annual rainfall.

The land should be marked both ways, the same as for corn, and my favorite distance for the plants is to have the rows three feet apart and the plants three feet apart in the row. This will give about 4800 plants to the acre, and an ounce of seed, if carefully and thoroughly planted, will plant an acre of land. We generally, here, however, figure on two ounces of seed to the acre.

When removing the plants from the seed bed and before transplanting them, it is a good policy to wring off at least one-third of the top of the plant, as this balances the evaporation from the plant to the loss of root surface and the plant will recover more rapidly after being transplanted. At the time the plants are being removed from the seed bed, each handful of plants, after having their tops cut or wrung off, should be dipped into a pail of water containing one tablespoonful of "Black Leaf 40" to three gallons of water. This is a necessary precaution to overcome the presence of aphis late in the season when the hot days come. This dipping kills whatever aphis is present on the young plants and also kills the eggs that would later give trouble. If, during the summer, aphis is discovered on one or more plants, it is easier to pull those plants out and destroy them rather than to try and spray the field. The above precaution, however, is generally all that is needed to keep a field reasonably free of this pest.

If one is fortunate enough to get cloudy or rainy weather during the transplanting time, it will not be necessary to use water in transplanting the seedlings. About the easiest method of transplanting, by hand, is to make a downward out with a spade, crowding the earth away. As soon as this is done, have a boy drop a plant in the space, remove the spade and let the youngster pack the dirt with his bare feet. During rainy or cloudy weather this is all that is needed to safely transplant broccoli plants, but during the dry times it is safer to transplant with a little water in each hill. My favorite method of hand transplanting during the dry weather is to hang about twenty pounds of commercial fertilizer in a barrel of water and use the resultant liquid for transplanting purposes. The same result can be obtained by suspending a grain sack full of fresh horse manure in a barrel of water.

The manure should be preferably fresh, as the fresh manure contains more of the ammonia salts that break up, liberating the nitrogen that is needed to start off the young plant.

Many large planters are now using the power planters, drawn by two horses and which, with three men, will transplant at least five acres per day. These machines are a necessity where a large acreage is contemplated, and several in a neighborhood can club together, as they cost nearly a hundred dollars, and are in use only a very few days during the entire year. Many smaller planters use the hand planters, which resemble a hand potato planter, and where the soil is in good tilth, with a deep mulch, and during a dry spell, they give good satisfaction. They are not, however, of much value during a rainy period, as soil sticks to the jaws too freely.

We will assume that the field is now transplanted, and the only cultural needs until the fall rains come, is thorough and persistent cultivation for, as I said before, the plant really has to make its growth during the summer and early fall, for, if it does not make a steady growth during this time, it will not make a commercial head of broccoli.

With us, the time when the "flower" or head or "curd" varies from early in February until late in March. When the head has grown to be about the size of a man's two fists the leaves should be brought up over the head and tied or fastened in some manner so that the head is entirely covered. This is necessary in order to obtain the pure white color which is the result of the bleaching. If the "flower" is not thus placed in the dark by tying its leaves the result will be a creamy colored head that will not command the highest price in the market.

Mr. Minton: When do you apply the fertilizer?

Dr. Bailey: It is an animal fertilizer and we figure that we must get it on by the first of February. We are afraid to put it on this time of year because the rain will wash it off or it will work down too deep in the ground.

Mr. Bouquet: Is that for next year?

Dr. Bailey: That is for next year. I will also say that we can't use the same land over two years in succession. Fungus is bound to get it. If you use it the second year it is necessary to put some men in there with grub hoes to take out the old stock.

Question: When do you harvest it?

Dr. Bailey: From the 22nd of February to the 10th of March. If it comes after the 10th of March it brings us no money because it comes about the time vegetables come from Florida. We try to strike the period between the 20th of February and the 10th of March because there is absolutely no fresh vegetables.

Mr. Austin: February is about the time that we have three feet of snow here in Hood River.

Dr. Bailey: We have the rains at that time. We get out in our broccoli patches with hip boots, gum coat and rubber hat, the horses almost swamp in the mud.

Mr. Bouquet: It seems to me that this society can's help us in this proposition. You live in different parts of the state and conditions would not be the same. I think that you can do much for yourselves as a body of horticultural men. That is one reason that Dr. Bailey was asked to present this paper. When you hear a man going crazy over broccoli, nail him, kill him if necessary, but do something as a body of men to put a stop to boosting until the broccoli growers get on their feet. That is the proposition that we are up against. We know it. Any new crop that ever did come into this state has been treated in that manner. It is up to us to see that this thing is protected just as much as any other crop.

Mr. Bateham: This reminds me of my experience as a Hood River man some ten years ago when the railroads and other interests were booming apples so extensively. Hood River was the place that they pointed out. It was always Hood River and everywhere else was "just as good." The Willamette Valley and other districts started in to boom Spitzenbergs. Like other Hood River men I was very often asked by would-be growers about it, but I found they did not want much information. They were set on that question. The boom had settled in their brain. They were told it was a most difficult apple to grow, that one hundred other varieties could be grown with greater ease than Spitzenbergs. Although we could grow it and we believed in it, we could not recommend them to do it unless they knew their location was favored. But you know what they said, "He doesn't want anybody else to get into the business." Thousands of acres were planted to Spitzenbergs and thousands of them are coming out again now. The same thing would happen in the broccoli business if everybody else thought they would grab that $100. Dr. Bailey told us the conditions there and most anybody that is familiar with the soil would know that they couldn't make it grow in many other places. There are many people who do not understand conditions and will jump right in on the information from railroad literature, just as the people did with the Spitzenbergs.

Chairman: Did you say the temperature went down to 16 or 18 above zero and that it did not do much harm to the broccoli?

Dr. Bailey: Last winter our lowest temperature was about 18 above. This fall it has already gone down to 18 and the sun came out bright the same day and I don't believe over 5 per cent is hurt. It is hardy as far as the cold weather goes. Water hurts it more than frost.

Chairman: If there are no further questions on this subject we will have the next subject, "Raising and Marketing Celery," by G. M. Hollowell of Milwaukie. He is an unusually successful raiser of onions and various kinds of vegetables. Mr. Hollowell is not with us today but the paper is here and the secretary, Mr. Minton, will read it.

Mr. Minton read the paper on "Raising and Marketing Celery."

CELERY GROWING AND MARKETING.

By Garland E. Hollowell, Milwaukie, Oregon.

Very little is known regarding the early history of celery and its use as a food is confined to comparatively recent years. The taste of celery is at first sometimes unpleasant to many persons, but they usually acquire a liking for it after eating it a few times. Today this delicious salad vegetable may be found in nearly every home. While celery may not present a large quantity of actual food value, it is both attractive and wholesome. Its use also makes other food more palatable, and greatly aids digestion.

The celery which we have on our tables today is the result of the careful selection and cultivation of the wild celery which is a native of the marshes of Southern England and Continental Europe. In its natural state celery is a biennial, producing its seed the second season, but as commonly grown for food it is an annual. If started too early in the spring it is apt to produce seed the first season.

Climatic conditions here in the Willamette Valley are very favorable for celery culture. For its best development the plant requires a comparatively dry atmosphere and cool nights. Warm, sultry weather is conducive to a soft growth and the plant is more or less susceptible to diseases. Bright sunshine and warmth during the day are essential, but the cooling atmosphere during the night makes the stems crisp and firm.

Any good rich soil with proper amount of moisture will produce good celery. Conditions being favorable, celery culture is not so difficult as most people imagine. However, unless the soil is right, it is impossible to grow good stalks. Few crops will show neglect of cultivation or lack of soil fertility more readily than celery. Thorough cultivation is at all times necessary.

Many of the failures in celery growing can be traced directly to careless methods of handling the plants. Many beginners fail here. Ordinarily one who can grow good plants succeed in growing a fairly good crop. Good seed is essential. Celery seed is practically worthless if over a year old. Many of the seed will germinate the second season, or after a number of years, but the plants produced will lack the vigor and be more liable to attacks of disease than those from fresh seed.

The two leading varieties of seed mostly used are White Plume, a hardy early celery, and Golden Self-Blanching. The latter variety is the one most used in this section of the country. It is a French variety, introduced from there in the year 1885.

In about 90 days after planting the seed, the plants are ready to transplant into the field. Within 90 to 100 days from that time the crop should be ready for marketing. Figuring accordingly, one can easily reckon about what time to plant celery seed so that the crop may be harvested before heavy freezes.

The demand for early celery here in this section is somewhat limited owing to warm weather. For this market the seeds are started in a hotbed or greenhouse during early February or the latter part of this month. For late celery, or the celery season proper, the plants are started in beds outside about March 10th to 15th. To avoid setting all at one time, planting should be distributed to two or three plantings. Setting into the field should commence about June 10th and finish about July 1st.

The seed bed should consist of fairly rich soil, so that the plants will make a steady substantial growth from the time they make their first appearance until the time they are set in the field. Any check in the growth of the celery plant is very detrimental to the crop and should be avoided at all times if possible.

The soil to be used for seed beds should be thoroughly loosened and pulverized about six inches in depth. Then it should be raked off level and smoothed with a straight edge to avoid water standing or puddling in low places. Some growers prefer broadcasting the seeds and raking them in in preference to planting them in rows. However, we have always had better success by planting the seeds in rows five inches apart, the seeds four to the inch in the row. This method permits light cultivation in the seed bed. The plants are easier to clip and also to take up for planting in the field. Cover the seeds very slightly; about one-eighth of an inch deep. After seeding it is an excellent plan to cover the bed or beds with burlap or a light covering of fine manure or straw. This will prevent the surface soil from drying out down to the slightly covered seed, and permit a more even temperature for germination.

In about three weeks, or when the plants begin to make their appearance, the covering, whatever it happens to be, should be removed immediately. For several days after the little plants appear they should be carefully watched lest the sun get too warm and burn them off. If the sun is very warm, be sure to keep the top soil moist to avoid the plants burning.

The plants will soon shoot up so that when they are about three inches high they should be clipped. Take a pair of scissors and cut the tops off about halfway from the ground to the tips of the tops. This will throw more strength of growth to the roots, thus making a sturdier, hardier plant and root.

Celery seeds, being so minute, make it a difficult task to plant them without getting them too thick. Timothy seed, being about the size of celery seed, enable one to use this seed in connection with the sowing of celery. It is a good plan to take about as many timothy seeds as you wish to plant of celery, and heat them enough in an oven to kill the seed germs. Then mix these with the celery, about half and half. The timothy seeds, being white, are easily distinguished from the brown celery seeds. A simple but efficient seeder is made by taking about a four-ounce baking powder can, with a lid or cover for it. Punch a hole in the bottom of the can about the size of a shingle nail. Put the seeds into the can, and by shaking it as you would a salt shaker, the seed will fall from this hole about as desired. This method of planting is far superior to rolling the seeds between the thumb and fingers, as is the custom with many people.

Growing celery requires a great deal of moisture. However, there is no crop more easily injured by excessive water or sour water-logged land than is the celery crop. Thorough drainage is indispensable. I once heard a man remark that the water he irrigated with was too cold for celery. He agitated heating it before applying to his crops. Had he drained his land thoroughly, thus warming it, I am sure his difficulty would have been removed.

Many people are of the opinion that first-class celery can be grown only on black soil or beaverdam land. It is true that much of our beaverdam land is particularly adapted to celery culture, but most soils, properly fertilized and tilled, with proper moisture, will produce good celery. Unless the soil contains the proper amount of fertility satisfactory results cannot be obtained, even though the best methods of cultivation are used. As a rule the land to be set to celery should be plowed from two to three times. An extra amount of preparation before the land is put into the crop will greatly assist in cultivation after the plants are set. It will also have a tendency to give small plants a better start at the beginning.

The principal methods of setting are the single row, the double row, and the solid bed. The two methods first named are the most popular methods used by growers. We prefer the single rows. These are put 30 to 34 inches apart, the plants six inches apart in the rows. Thus the plants are more easily tended, and while more lumber is required for blanching, the stock will be straighter and bunch up more satisfactorily than that grown in double rows.

An old worn out hoe with a twelve to fourteen inch handle makes an excellent tool with which to set plants. Once the setter becomes used to this tool he will prefer it to any other. We use it for most small plant setting. Often the ground where a plant is to be set is a little hard or there may be a clod to interfere. With the hoe one may strike an extra blow or so which does not inconvenience the setter much, but greatly aids the tender roots after the plant is set. There is a knack in using this tool. One blow with the tool where the plant is to be set is usually sufficient. Before removing the hoe from the furrow draw it towards you far enough to allow a hole large enough for the plant roots. With the left hand place the plant roots in this hole, retaining your hold until the plant is entirely set. Remove the hoe after the plant has been placed, dropping it one side of the row, and with the right hand the dirt is firmed about the roots in the usual manner. This method is very simple.

Unless one has water for irrigation at his command it is very difficult to start plants during the warm June days. We use the sprinkling system for irrigation. If the ground to be set is dry on top for a couple of inches we sprinkle it, allowing the sprinkler to stand about an hour in a place before setting the plant. Immediately after the plants are set the water is again started and let run for an hour or so. The following day, if the sun is very warm and the plants show signs of wilting, they are watered a short time until they have become rooted. If this method is followed carefully, one need not lose a single plant, no matter how warm the weather may be. We usually set plants right through the hottest part of the day with excellent results.

As soon as the plants have become thoroughly rooted, the ground should be worked well around them. This will need to be done by hand while the centers of the rows may be cultivated with a horse cultivator. Celery should be cultivated once a week during the growing season, and watered thoroughly as weather conditions demand. It is best to water thoroughly, then cultivate as soon as the ground is dry enough, rather than to aggravate it with frequent insufficient waterings. One objection to overhead irrigation is that if there is present any celery blight, sprinkling has a tendency to cause the disease to spread rapidly. However, if one is careful in handling the plants in the seed bed and after they are set in the field by spraying, this disease may not develop.

Once the celery becomes affected with this disease, it is almost uncontrollable. Climatic conditions being favorable, however, it may be temporarily checked. Bordeaux is the most effective spray we have used. The proportions are five pounds of bluestone, and six pounds of lime, to fifty gallons of water. The lime-water and bluestone-water is mixed only as it is used. Unless one is familiar with mixing Bordeaux they should not attempt it until they have been informed. We aim to spray once in the seed bed and about every ten days in the field. If one irrigates by sprinkling, as soon as the plants are dry they should be immediately sprayed. An ounce of prevention may save your crop.

Blanching with boards is the most satisfactory and economical way to follow. We use one-by-twelve lumber, fourteen and sixteen feet long, surfaced on one side. These boards may then be handled in pairs. When the celery is of the proper size, carry and place the pairs of boards flat on the ground close to the row of plants to be blanched. Straight rows are very essential in celery growing. When as many boards are in as desired for blanching at that time, a man at each end of the pair of boards, straddling the row, may lift the front board to the opposite side of the row, and stand it up closely to the plants, then raise the other board and cleat to hold in place, using a cleat at each end, and one at the center of the board. For cleats we use a piece of one inch by one and one-half inches by nine inches, driving a six-penny nail an inch or so from each end, leaving about half an inch of the nail sticking out, and after the boards are set up a little dirt should be placed over the crack of the bottom of the board to keep out the air. From fourteen to twenty-one days are required for blanching, varying according to the weather. If allowed to stand too long in the boards after it is blanched, it may become dirty. For removing the on a large scale. The outside worthless stalks are trimmed off and celery from the ground, a sharp spade is about the best tool. The plants may be cut off just at the top of the ground, leaving most of the roots in the ground. A machine for this purpose is used, when done left in the field. The marketable ones are taken to a packing house, washed and bunched. Usually a dozen stalks or plants are placed in each bunch or bundle.

If the air is kept from celery by wrapping it in paper or placing it in a tight case, it will not wilt for several days. We use a practically tight case for shipping. These are lined with a light wrapping paper to exclude air and for cleanliness. Four dozen No. 1 or six dozen No. 2 celery are placed in each case. Celery put up in this way will arrive at its destination in practically as nice shape as when it left the packing house. If drained before placing in the cases it will keep nicely for several days.

A few years ago there was little opposition for the grower who put a fancy article on the market. Today the competition is very keen. The Japanese, for instance, are excellent imitators. The largest celery seems to be most in demand on the market, as it allows a better market for the retailer to work on. It also stands up better and longer. Ordinarily prices are not so good as formerly, usually ranging from 60 to 70 cents for No. 1 stalks and 35 to 40 cents for No. 2.

The time is soon coming when growers will be obliged to form an association for handling their stock, as the apple growers of Hood River and elsewhere have done. By so doing a broader market will be opened outside. Celery can then be shipped in car lots. The returns from an acre of good celery are sufficient to justify the grower in using good land, plenty of manure and commercial fertilizer, and giving it his close attention and careful cultivation. Water for irrigation is essential in most localities, for when the crop needs moisture it should have it. Depending entirely on rain is very uncertain. Good seed, rich land, properly drained, sufficient water for irrigation, a reasonably close market, and shipping facilities, as well as good judgment and willingness to work hard are the main essentials for successful celery growing.

Mr. Williamson: There is a matter that I want to bring up in regard to gavel. Col. Henry Dosch, who has long been a member of this society and stated that he had intended to take care of this matter himself, but he has just broken one of his ribs and will not be able to come so I will do it. At the last meeting of the Society at Corvallis, Mr. A. Quarnberg, who has attended almost every meeting of the State Horticultural Society since it has been organized, noticed that we had no gavel to open with and he got up and stated that he would prepare for this Society a gavel made from the first apple tree planted in the Pacific Northwest. He expected to come and make this presentation himself when he intended to read the paper he has prepared; but he was unable to do so and he asked me if I would come up and present the gavel and read the paper. He has written it as though he, himself, read it, and I simply make that explanation so that the Society will understand some of the expressions used in the paper.

Chairman: You read that paper; we would be glad to have you do it.

Mr. Williamson: It was made from the limbs of the first apple tree in the Northwest left with all the knots on. He thought it would be more appropriate to have it that way. It is from the apple tree planted by Dr. McLoughlin. He was the governor of this Oregon country under the Hudson Bay Co.

Mr. Williamson read the paper. It follows:

In years gone by I have had the pleasure of attending many meetings of the Oregon State Horticultural Society. These meetings were always interesting and profitable and generally of a very practical character.

In addition to its practical sides the subject of horticulture has many other interesting features which these meetings occasionally might profitably take up and consider for a short while. In this connection I thought that it might perhaps not be amiss to bring to your attention for a few moments a little of the early history and the somewhat sentimental side of the coming of the apple to the Pacific Northwest.

I here have a gavel which I desire to present to this Society on this occasion. It is made from the branches of the most ancient apple tree in the old Oregon country. This old tree is still alive and growing on the grounds of the Vancouver Barracks at Vancouver, Washington. It is, without doubt, the oldest apple tree on the Pacific Coast. Its history is quite clear and authoritatively correct.

About ninety-two years ago, Dr. John McLoughlin, Governor of the Hudson Bay Company west of the Rocky Mountains, located the headquarters of his company on the terrace sloping up from the north bank of the Columbia River where now the city of Vancouver and the Vancouver Barracks are situated. In connection with the location of the Hudson Bay Company at Vancouver is found the first record of the coming of the apple to the Northwest, then called the Oregon country.

The first account of this historic tree, then about ten years old, was written by Mrs. Narcisso Whitman while she was staying at Fort Vancouver at the home of Dr. McLoughlin while her husband was in the Walla Walla country looking for a location. I will read an extract from her diary under date of September 12, 1836: "I must mention the origin of these apples. A gentleman, twelve years ago, while at a party in London, put seeds of the apples which they ate in his vest pocket. Soon afterwards he took a voyage to this country and left them here. Now they are greatly multiplied."

Another story of this old tree, not inconsistent with the quotation from Mrs. Whitman's diary, is as follows: "At a dinner party in London about 1825, given in honor of some young gentlemen in the employ of the Hudson Bay Company, who were about to embark for Fort Vancouver, seeds from the apples eaten were playfully slipped by some of the young ladies into the waist-coat pockets of the young men and upon their arrival at their destination the young men, in overhauling their wardrobes, discovered the seeds and gave them to Jim Bruse, the gardener of the Fort, who planted the same." The seeds produced, among others, the now famous apple tree at the Vancouver Barracks.

The story is told that after several years of waiting one of the trees bore an apple which, when ripe, was picked by Governor McLoughlin and carefully cut into seventeen slices and one precious slice of the luscious fruit was served to each person at the Governor's table. The next year the trees bore twenty apples, and the old tree left is still bearing fruit.

The Hon. Glenn N. Ranck, of Vancouver, Washington, has written a poem in honor of the old apple tree which I now will read:

In eighteen hundred and twenty-six on London's famous strand,
On the eve of their departure for Oregon's distant land,
Hudson's Bay officials sat in festive banquet room,
With wives and mothers dear and sweethearts in their bloom.

They drank long life to ladies bright
And to their lovers tall:
While glasses clinked and laughter light
Rang round that stately hall.
Fair Kate until her lover true
Then blushingly did say:
"These magic apple seeds take with you
When at dawn you sail away;
And that they may be a sign
That you will love me evermore,
Pray plant these true love seeds of mine
On far Columbia's fertile shore."

And so love's apple seeds were carried to this far western slope;
And here they thrived and prospered beyond the lover's fondest hope;
In far away Vancouver Fort, to Indians' wondering eyes,
A lordly apple tree soon flung green banners to the skies.

Its offspring now are scattered wide
O'er the broad Pacific Coast,
Their luscious apples are our pride,
The orchard's green, the poet's boast.
Their choice fruit they are lending,
With cool shade for you and me;
While thousands we are sending
To old London o'er the sea.
So now we bless the lady fair,
And bless her lover tall,
Who planted here, with tender care,
Sweet apples for us all.

And now on the occasion of the meeting of this society in the beautiful and fertile Hood River Valley, known the world over for its luscious and unexcelled apples, I think it is entirely fitting that a souvenir from the oldest apple tree in the Pacific Northwest should be presented to this Society at this time. I now have the honor and the pleasure, Mr. President, of presenting to you this rustic and historic gavel.

Mr. Bateham: I move that the cordial thanks of this Society be extended to our brother in Vancouver. The motion was seconded and carried.

Chairman: I think this a very fitting action to take on the part of this Society. I trust this gavel will be retained as the property of the Association by the next president and that he will pass it on to his successor whoever he may be. The name of Colonel Dosch was mentioned a moment ago. Several years ago I wrote to Colonel Dosch and asked him about several varieties of nuts, as he is quite a lover of that special line and has been very successful in raising and producing them. I told him some of my experiences in the production of nuts. I had sent to one of the nurserymen of the state for some hazelnut bushes. They produced foliage which was very beautiful but they didn't produce any nuts. Mr. Quarnberg asked me to send him some samples of my hazelnut trees, a branch that had leaves on. He wrote to me and told me that he was familiar with this variety, that it was an ornamental tree and never produced nuts. I wrote to Mr. Quarnberg and asked him to send me some scions that would produce nuts and I have grafted them onto my tree and they are now growing. If I may trespass on your time for a little personal reference in connection with the presentation of this gavel. Seventy-five years ago about the first day of last June, a company of missionaries landed at Fort Vancouver, off the old ship Lausanne, which had just crossed around Cape Horn after a voyage commencing the 30th day of October and they landed the 1st day of June at Vancouver. They were received by Dr. McLaughlin, the governor of this territory, and I have heard many times of the kind treatment which Dr. McLaughlin extended to them. One of that number was my mother. So I am especially impressed on receiving this gavel from that historical old tree.

Mr. Park: May I call the attention of the convention that Salem has extended a very cordial invitation to hold its thirty-second annual meeting at Salem, the center of the loganberry industry, also of the prune and other industries, and the Commercial Club extends their most cordial and hearty invitation for you to meet next year in that city.

Chairman: Now you have heard Mr. Park. Mr. Park is president of the State Horticultural Board, a different organization from the Horticultural Society. For years, Mr. Smith was president, afterward Mr. Park. Now we are glad to see Mr. Park here especially as he is a successful pear grower and is the owner of a very famous orchard near Salem, and the subject of pears is to be considered later and I hope Mr. Park will be here to talk to us at that time. Is there any action or will you wait until the close of the meeting?

Mr. Paulus: If I am not out of order I would like to second Mr. Park's invitation on this matter. In behalf of the Salem fruit growers I wish to join in Mr. Park's invitation and also the invitation of the Salem Commercial Club to invite you to have your next annual meeting there. It is the center of the fruit industry in the Willamette Valley. Around Salem we have something like 7000 acres of fruit, about 2200 acres of loganberries, something like 2500 acres of prunes, and the balance small fruits and berries. I feel sure that if you have your next meeting down there you will be well taken care of.

The secretary then read a formal invitation from the Salem Fruit Union and the Salem Commercial Club.

Salem, Oregon, Sept. 29, 1916.

Mr. C. D. Minton,
Stock Exchange,
Portland, Oregon.

Dear Sir: Because of the extensive fruit interests around Salem, we believe that your Capital City would be a logical place for the Horticultural Society of Oregon to hold its next annual convention. The city is centrally located with railroad connections from all points, thus assuring the opportunity of larger attendance than would be had at other less advantageous points.

The city offers many educational features in the raising, packing and marketing of all kinds of fruits, especially prunes, cherries and loganberries. Of special interest are the two largest loganberry juice factories in the world.

The Commercial Club is actively engaged in the furthering of agricultural interests of the state and extends to your organization the hospitality of the city and assures you that your stay in our city will be a pleasant one as well as educational.

We especially want the opportunity of working with the Horticultural Society in whatever way we can be of assistance. Our Mr.

Robt. C. Paulus and Mr. Chas. McNary will be with you at your meeting to present the matter in person.

Will you not give our invitation your careful consideration and try to be with us next year? Yours very truly,

SALEM COMMERCIAL CLUB,
By Ivan G. McDaniel, Manager.

Salem, Oregon, Dec. 9, 1916.

C. D. Minton,
Secretary Oregon State Horticultural Society,
Hood River, Oregon.

Salem makes strong bid for 1917 convention of your organization. This is the center of the prune, loganberry and diversified horticulture of the state. It is the capital of the state and the growers and packers of this section are anxious to co-operate with you. The Commercial Club offers you the hospitality of the club and of the city. Salem Fruit Union joins with us in the invitation with its more than 500 members. Give the prune and loganberry industries fair recognition. We assure you our hearty co-operation and will do all possible to make 1917 convention biggest ever held at Salem.

IVAN G. M'DANIEL,
Manager Salem Commercial Club.

Mr. Norton: The fruit growers of Sutherlin extend you an invitation to hold the convention in their valley. This Society has held conventions in many of the other sections but has passed up the Umpqua Valley. We would like to have you consider the Umpqua Valley for a future meeting place but we are willing to wait.

Mr. McDonald: I move that the next convention be held in Salem.

Motion seconded and carried.

Chairman: The gentleman from Umpqua wants us to keep in mind that they are in line another year.

Mr. Norton: Yes. Don't forget the Umpqua turkey banquet that will be ready for you in 1918.

The meeting then adjourned until 1:30 p. m.

Tuesday Afternoon, December 12, 1916.

The meeting was called to order by the chairman at 1:30 p. m.

Chairman: Before we take up our program for the afternoon we have a little matter to present to you. We have with us this afternoon one of the oldest citizens in Hood River, Mr. David Turner, who has lived in Hood River over 55 years. He is an old fruit grower of this valley. The first night I ever spent in Hood River, when I came here to make a home, was spent at Mr. Turner's home. A few years ago he sold that farm and moved to town. He is interested in the orchard business and every year he has a good garden, and he has his own fruit that he raises. A little matter that I want to call to your attention now is the fact that he has a peculiar method of grafting a tree. Mr. Smith induced him to come up and explain his method of grafting a tree.

Mr. Turner then explained and demonstrated his new method.

(Mr. Turner died suddenly December 26, 1916, just two weeks later.)

Chairman: We will now have Prof. Gardner's paper on "The Influence of Pruning Upon the Fruit Spur System of the Apple."

Prof. Gardner: I rather hesitate to speak to a gathering of fruit growers on the question of pruning for the reason that it is one of the most discussed subjects that the fruit growers are acquainted with, it is one of the subjects on which many diverse opinions are held.

Prof. Gardner read his paper.

THE INFLUENCE OF PRUNING UPON THE FRUIT SPUR SYSTEM OF THE APPLE.

By V. R. Gardner.

In presenting this subject, it is my desire to be as brief and to the point as possible. I shall attempt to include no more detail than seems absolutely necessary to a discussion of the fruiting habits of the apple and of some of the more evident relations of certain pruning practices to these fruiting habits.

If we are to understand how to prune so as best to develop the fruiting habits of our trees, it is desirable that we should keep clearly in mind an ideal toward which we should work. The ideal fruit tree is one that bears regularly large quantities of high-grade fruit and at a reasonably low cost per unit of production. How may proper pruning aid in realizing this ideal? What are the pruning practices that help or hinder in attaining it, and why do they help or hinder?

The Fruiting Habits of the Apple.

Let us first consider the fruiting habits of the apple. Flowers appear in the spring from buds produced the season before. Not all the winter buds, however, unfold and produce flowers. Some give rise to new shoot growth only. It is often possible to tell from inspection during the fall or winter which buds are to give rise in the spring to flowers and fruit and which to new shoots.

If we study the fruiting branches of the apple somewhat closely, we will note that in the case of many varieties (e. g. Spitzenberg, Grimes, etc.) flower buds are to be found only upon short woody branches, lateral to the main direction of growth. Such short woody branches we call spurs. In the case of young trees of certain other varieties (e. g. Rome, Gano, etc.) they are to be found for the most part laterally upon the shoots of the past season; though, generally, as trees of these varieties become older, they gradually come to bear upon spurs. At first thought it may seen to be a point of little significance that young trees of certain varieties produce their fruit buds and consequently their fruit upon shoots, instead of spurs, or upon spurs instead of shoots. However, it will be seen to be a matter of considerable importance, especially with varieties that bear only upon spurs, when it is realized that certain pruning practices result in practically eliminating the fruit spur system from the trees. Other pruning practices that tend greatly to develop the fruit spur system and to correspondingly check shoot growth may be almost equally harmful for young trees of varieties that at that time bear mainly upon shoots. From these statements it becomes evident that one of the first things the owner of a young orchard should do is to determine by which method the variety or varieties he is growing bears the bulk of its fruit.

Since the larger part of our apple varieties produce the bulk of their early crops upon fruit spurs and since practically all varieties bear their later crops in this manner, this paper will concern itself with the way in which fruit spur formation and fruit spur functioning is influenced by various pruning practices. This is far from stating that the influence of pruning practices upon the formation of lateral buds upon shoots is not important. It is an important question for the owner of a young Rome or Gano orchard to consider, but time will prevent its discussion here.

Where and When Fruit Spurs Are Formed.

If good fruit spurs are so vital to the bearing of satisfactory crops, it becomes evident that pruning and cultural practices should be such as will tend to develop and maintain an extensive and efficient fruit spur system. Let us first inquire as to when and where fruit spurs arise. Do they develop on the new growth, on the growth of the past season, or from older wood? Do they develop more readily upon shoots in certain portions of the tree than upon shoots in other portions and if so, why? Are they more prone to develop from certain portions than from certain other portions of the same shoot? These are not merely academic questions, for the results that we obtain from our pruning practices very largely depend upon their answers. Fortunately we are not without answers to some of them.

Careful examination will show that practically all spurs starting to develop any one season start out from shoot growth of the season before. A few develop from shoot growth of the current season, i. e. from the new wood, but the number developing in this way is comparatively small. Very rarely do we find spurs developing from wood older than the past season's growth. Just why this is true it might be difficult fully to answer, but the fact remains that it is only in exceptional cases that buds that were formed during, say, the season of 1910 develop into spurs later than 1911. That is if spurs do not start to develop from them in 1911 we cannot expect to obtain spurs from them in later years. They may grow out into shoots in later years, under the stimulus of very heavy pruning, heavy fertilization, etc., but they are not apt to develop into fruit spurs. This fact should carry an important lesson for the fruit grower, for it means that if he is to have fruit spurs in the lower and interior part of his tree he must develop them when the tree is young, when that part of the tree is year-old growth. If the interior part of the tree is prevented from developing fruit spurs by too severe pruning, or if spurs once formed there are broken or pruned off, it is practically impossible to develop them there again, except indirectly upon new sucker or shoot growth that may be encouraged. The fruit grower should come to look upon the shoot growth of his trees as material that is capable of yielding fruit spurs directly only for a year. If it does not furnish him fruit spurs within that period it loses its value as fruit producing wood and is useful simply as a support for newer wood that may produce fruit.

From what has been said one would infer that the question of whether or not the lateral buds of a shoot are, or are not, to develop into spurs is more or less under the grower's control. This is actually the case. Examination of the buds along an average apple shoot will disclose the fact that some are very small and poorly developed. They look as though they may have been poorly nourished. Others are large and plump, giving evidence of being strong and vigorous. If such a shoot is observed as growth starts in the spring, it will be noted that usually it is only the large plump buds that push out and form new shoots and spurs. Should the small weak buds "break" under the stimulus of heavy pruning, it is generally shoot growth rather than spurs that develop from them; and if they "break" and form spurs, such spurs are weak and soon die out or cease to grow. In other words, it is only the strong vigorous buds on shoots that are apt to make strong vigorous fruit spurs. Close observation in the orchard will reveal the further fact that it is those portions of the shoot that are most exposed to the sunlight—namely, the upper and outer portions—that develop strong large lateral buds. It naturally follows that it is from these portions of the shoot that most of the fruit spurs may be expected to develop; and, as a matter of fact, do develop.

The Influence of Winter Heading-Back Upon the Formation of Fruit Spurs.

With these points in mind let us see how several of the more common pruning practices modify or control the formation of fruit spurs. First let us consider the influence of winter heading-back of the shoot growth of the past season—a practice constituting well over fifty per cent of the pruning afforded our orchard trees. The immediate result is to remove the terminal one-half or one-third of the shoot—the one-half or one-third that has most of the large vigorous lateral buds possessed by the entire shoot and that normally would grow out into fruit spurs. This leaves few buds from which spurs may be expected to develop and this means that the major part of the energies of the tree will be expended in the development of new shoots from the smaller and weaker lateral buds that are left. Such shoots, coming as they do from adjacent joints or nodes, come into close competition for light and air, crowd each other, and grow out and up toward the light. This in turn forces the formation of the large plump buds that are to give rise to the fruit spurs of another season far up or out on the shoots, where the light supply is a little more abundant. Heading back these new shoots the following winter again removes a large percentage of the buds that otherwise might develop into fruit spurs and stimulates the formation of another crop of shoots that again crowd each other, and with the same general results. Heavy heading-back then tends to reduce greatly the number of new fruit spurs—(1) through the removal of buds that would normally grow out into spurs—(2) through forcing into shoot growth the weak buds toward the base of the shoots—(3) through leading to the greater crowding of the new shoots and thus weakening their lower buds and pushing out still further (terminally) the area of the new shoot that develops strong spur producing buds.

It requires little study to see that a moderate or a light heading-back, while operating in the same general direction, exerts a correspondingly less powerful check upon fruit spur formation.

The Influence of Winter Thinning-out Upon the Formation of Fruit Spurs.

Thinning-out of shoots during the dormant season, on the other hand, has an effect upon fruit spur formation almost opposite from that of heading-back. It is true that thinning-out removes a number of the large well developed lateral buds that otherwise might form fruit spurs, but the proportion is not so great as in the case of a heading-back that is equally severe, because most of such buds are located on the terminal portion of the shoot. If these strong, potentially spur producing buds were evenly distributed between the basal and terminal half of each and every shoot, it is evident that a 50 per cent thinning would remove exactly as many as a 50 per cent heading-back; but on the other hand, that if all such buds were located on the terminal half of each shoot the heading-back would remove them all, while the thinning-out would remove only half of them. These are extreme cases, but they at least serve to illustrate the general tendency of the two practices so far as concerns the removal of spur forming buds. Furthermore, there is an equally great contrast between the results that follow thinning as compared with heading in the influence of the two practices upon the location, or distribution, of such buds upon the new shoots. Just as heading-back tends to increase the amount of new shoot growth, concentrate it in a smaller area, lead to crowding and thus through shading to a pushing out toward the end of the shoot the area that produces large plump spur-producing buds, so thinning-out tends to decrease relatively the amount of new shoot growth, distribute it over a larger area, avoid crowding and thus, through providing better light conditions for the basal portions of the shoots, lengthen the area that produces spur-producing buds and bring it closer to the base of the shoot. Naturally the effects of light or moderate thinning-out upon fruit spur formation may be expected to be less pronounced than those following heavy thinning.

The Influence of Early Summer Pruning Upon the Formation of Fruit Spurs.

From the statements that have just been made, it might be inferred that because we desire a large number of fruit spurs in the apple tree and because the tendency of winter thinning is to encourage their formation while that of winter heading is to check or reduce it, thinning-out is the only pruning practice to be recommended and heading-back is in all cases to be avoided. Even though such recommendations were made few practical fruit growers would be inclined to follow them, at least without some modification, or they know that constant thinning-out coupled with no heading-back eventually would result in the development of loose straggling trees—trees weak mechanically, even though they might possess sufficient spurs for large crops of fruit. Is there not some way, then, of keeping the apple tree fairly compact and still not invite the evils attendant upon the severe winter heading-back that is practiced so commonly? Investigations of the Oregon Experiment Station extending over a number of years lead to our recommending a certain type of summer pruning to obviate this difficulty. It has been found that an early summer pruning (about July 1) of young apple trees is followed by a secondary late summer shoot growth that functionally closely corresponds with the terminal half or third of shoots on trees that are not summer pruned. That is this late summer secondary shoot growth normally produces large plump lateral buds that the following season are prone to grow out into fruit spurs. Furthermore, this late summer shoot growth of summer pruned trees is generally advantageously placed in the tree, and it is not apt to be so long that much heading-back is required during the following dormant season. The result is that the tree under this pruning treatment rapidly develops a fruit spur system because this secondary shoot growth becomes covered with fruit spurs the year following its production. At the same time there is no tendency for the tree to become straggling in form. It is a method of procedure enabling the preservation of all the good effects resulting from thinning, for there is a vigorous thinning both at the time of summer and of winter pruning, and the avoiding of the evil effects of heading back, because the heading-back is done at a time of the year when it does not remove the portion of the shoot that is most prone to develop fruit spurs. This latter combination then, is the pruning treatment that we recommend for the quick development of a vigorous and extensive fruit spur system in young trees of **varieties that normally bear upon spurs from the start.** It will be understood that it is not a pruning treatment recommended for varieties that at first normally bear mainly upon shoots. It will be understood, also, that it is not a pruning treatment that is recommended for older trees that have been bearing good crops for a number of years and necessarily have already developed an extensive fruit spur system. With them the object should be to keep their old spurs strong, vigorous and productive rather than to promote the formation of a great many new ones. Pruning treatment that will best promote that object will be discussed later.

Before leaving this subject it may be well to call attention to the fact that the proper timing of this summer pruning is an important matter. It should be given comparatively early in the growing season. If delayed until there are signs of terminal bud formation in the main shoots, little or no secondary shoot growth will be produced. On the other hand if done too early in the growing season equally unsatisfactory results are apt to follow. The best time seems to be when shoots of the current season have obtained one-half to two-thirds of their normal length. The exact time will vary with variety, location, season and many environmental factors.

The Influence of Heading-back and Thinning-out Upon Old Fruit Spurs.

The statement was made that the ideal fruit spur system is not only an extensive system, but a productive system. At first thought it might seem that productiveness is correlated with age. However, recent investigations have shown that old spurs are neither more nor less efficient than young spurs on account of their age, for many old spurs are regular producers of high-grade fruit. On the average they are less efficient, but less efficient because less vigorous. What, then, are the factors influencing the productiveness of the individual fruit spur?

A careful study during the growing season of the fruit spur system of almost any old apple tree reveals the fact that it is in the more densely shaded portions that we find the majority of the weak and dying spurs. Light supply is undoubtedly not the only factor influencing the vigor of individual fruit spurs, but it is plain that it is an important one. The influence of heading-back and of thinning-out upon light supply and consequently upon spur formation from buds on the basal portions of shoots has already been pointed out. It is evident that these two practices would lead to equal, or even greater, differences in the light supply reaching already established spurs in the lower and interior portions of the tree. Therefore, we would expect more vigorous, because better lighted, spurs in the tree receiving much thinning; and this would be true whether the thinning is limited to the new shoots or is extended to the older wood. On the other hand, we would expect weaker spurs in trees receiving much heading-back, even though at first thought it might seem that this practice would tend to divert a certain amount of food material into the spurs lower down in the tree. It should be remembered, however, that it is elaborated food materials, such as are received from well developed leaves, rather than raw food material, such as are received from the roots, that induce fruit bud formation and fruiting; and heading-back would have more of a tendency to divert raw, rather than elaborated food materials into the spurs. That our expectations in this matter square with the facts is evident to one who will go to the orchard and carefully compare the fruit spurs of severely thinned with those of severely headed trees.

Thinning-out, then, would seem to be a practice that not only encourages the formation and development of an extensive fruit spur system in the apple, but that operates to keep that system in a strong, vigorous and thrifty condition. In this connection it may be worthy of note that these results may probably be expected to follow summer as well as winter thinning. On the other hand, heading-back during the dormant season would seem to be a practice that not only checks fruit spur production, but tends to weaken and devitalize already established spurs. From this it is evident that thinning-out should come to occupy a more prominent and heading-back a less prominent place in the pruning of both young and old apple trees.

This is far from stating that apple trees just coming into bearing or that have been bearing for a number of years, should not be headed-back. As stated before, summer heading-back may well have a place in the development of the young trees, especially when coupled with both summer and winter thinning-out. Furthermore, it is often desirable to head-back the limbs in old trees so as to force out new shoots lower in the tree—shoots upon which new spurs may be developed to replace those in the older portions of the tree that have been destroyed through one agency or another.

As a matter of practice it will generally be found that the average tree requires a certain amount of thinning-out and a certain amount of heading-back in order to develop the most efficient fruit spur system. Just how much of each type or kind of pruning to give in each case cannot be told in any paper on the subject. These are questions that must be settled for each tree at the time of pruning, but they are questions that should not be settled in haphazard fashion. The correct answer to them depends first upon accurate judgment regarding the tree's condition and its needs and then in a sound knowledge of how distinct pruning practices will modify those conditions and meet those needs. It would seem to the writer that this series of questions should flash through the mind of the pruner before he prunes any apple trees:

(1) Does this tree at this age bear mainly upon spurs or upon lateral buds or shoots?

(2) If it bears upon spurs are there enough or too few or too many? How severe and what kind of pruning will just maintain, increase, or decrease their number?

(3) Are the older spurs becoming weak and dying out?

(4) How severe and what kind of pruning will invigorate them?

(5) How can I maintain the desired shape of tree without injuring the fruit spur system?

Let these questions be seriously considered and there will be made fewer expensive mistakes in the pruning of our fruit trees.

Question: What is the effect of heading back after the terminal bud has formed on a limb?

Prof. Gardner: Supposing your terminal bud has been formed up there by August 1, then you pruned off that, I don't imagine a pruning of that sort has much effect of one kind or another.

Question: You advise heading back a little earlier, the first of July?

Prof. Gardner: Remember this, in your old trees that are well into bearing, in most of your orchards around here, your main point is not to develop more fruit spurs, keep those you already have in a good condition. Open up the top and let the sunlight in.

Question: If that limb that you hold in your hand was on a 20-year-old tree, somewhat weakened in vitality, where would you cut those limbs in the winter time if the tree was thirty feet in diameter?

Prof. Gardner: In a tree that is thrity feet in diameter probably good results could be obtained by taking out entirely a number of limbs of this size. There are a good many orchards where limb brush is pretty thick and much would be accomplished by the entire removal of limbs fully as large as this.

Question: Is it possible to develop a spur system on a regular sucker growth on the interior portion of your tree?

Prof. Gardner: If you have a sucker just about like that it is just as easy to develop on that sucker as on the shoot, but most suckers are not like this shoot, they differ from it in this respect—that most of the buds on the sucker are small and weak like the lower buds on this shoot. If you have a sucker whose lateral buds are for the main part small and weak, it is practically impossible to develop fruit on it. If the tree was open and exposed to the light you would probably find a good many large plump buds.

Mr. G. Roberts: My trees for a while were infested with brown aphis and the fruit spurs were removed. I have since been using nitrate of soda and have started a crop of suckers in there. I didn't prune them back last summer. How would you treat those trees at the present time? They average about fifteen years. There are no fruit spurs in what you call the heart of the tree.

Prof. Gardner: If the suckers come up very thick and plump I would cut them out. If they are reasonably spaced apart I wouldn't thin the suckers too much, but thin the brush up above them and let the sunlight into them and I doubt if I would do any heading back at all on the part of those suckers. If you head back those suckers, the bulk of your buds on those suckers are on the upper section and if you head lower you will get only the weaker ones.

Chairman: I think the time has arrived that we will have to call this discussion closed. It has been very interesting I think to every fruit grower and I wish we had more time to devote to it but we have more papers to present this afternoon.

Mr. E. H. Shepherd gave a talk on "What Shall We Pack in Apples?"

WHAT SHALL WE PACK IN APPLES

By E. H. Shepherd, Editor of Better Fruit

Mr. Chairman and Members of the Society: I am sorry that Mr. Minton has left the room because I have a few personal remarks which I would like to make; however, I think I will make them. A short time ago I received a letter from Brother Minton stating that he was about crazy—he thought he was about crazy. Now I differ with him just a little bit because he is just like all the rest of the fruit growers who have been engaged in harvesting a crop with all the difficulties that we have had to contend with. We have been about all crazy. Now if he hadn't been he wouldn't have assigned a subject to me so difficult or one of so vital importance as the one, "What Shall We Pack in Apples." That subject is one that should be taken up in a definite way by associations and shipping concerns and be determined on actual values or prices that are obtained on different varieties, different grades, and different sizes of fruits. "What We Shall Pack in Apples" is not a subject which any grower can sit down and write out a program or a set of rules and tell you what it will pay you to pack. Now what we ought to pack as a matter of pride and so forth is all right but that is not the way to determine what we should pack. What it would pay us to pack in apples is the information we want. I had hoped to be able to give you some information on that subject as the matter has been in my mind for some time previous to the time in which Secretary Minton wrote me to address the meeting on this subject. With the object in view of obtaining information along that line I have written to a number of associations and shipping concerns, making one simple short request for information, asking them to give me a list of varieties, a list of grades and a list of sizes and different varieties on apples which last year, and the year before, had returned the grower less than 60 cents a box. Now you apple men will be surprised at the replies I received. Most of them said they hadn't sold any apples for the growers for less than 60 cents a box. Some of them said they were too busy at the present time to make up a statement of that kind as it would be necessary to refer to last year's records, but some time in the near future they would give my request further attention. It is my intention to get just that information, the exact figures obtained on different varieties and different sizes of varieties where the price was approximately 60 cents or less. I think we all pretty generally agree that it will cost us approximately around 30 cents to grow a box of apples and 30 cents to 40 cents to harvest a box of apples, consequently any variety that does not return the grower at least 60 cents or any grade of variety or any size of a grade that does not return the grower at least 60 cents won't pay us to pack. Now where varieties won't bring us 60 cents for the best grade the solution is simple—cut out those varieties by either digging up the tree or grafting the variety to some other which is a paying variety. Where there are varieties in sizes or grades of varieties that bring something below 60 cents, then we must decide which of those we shall not pack. It must be remembered that in such cases the extra fancy and fancy may bring back a satisfactory price, the C grade may not. In order to determine what we shall pack we must know the cost of packing. Perhaps this is a fair average. Box 10½ cents, hauling to orchard ½ cent, making up box 1 cent, which is 12 cents, packing 4 cents, paper 4½ cents, nailing and stencilling 1 cent per box, warehouse 1½ cents, making a total of 23 cents, cost of packing a box of apples. Now what must we get for that box of apples in order to pay for this packing and do as well as we would get if we sold them to the vinegar factory at $6.00 a ton; a box of apples will bring from the vinegar factory 12 cents, this added to the packing cost of the handling will bring the figure to 35 cents. The association charges are usually 10 cents. Freight to market is 5 cents, making a total of 50 cents. Now that box of apples would have to sell by the commission dealer at 60 cents a box, as they figure their commission on 15 per cent, and 15 per cent of 60 cents would be 9 cents, in other words a box of apples selling at 59 cents by the wholesaler would be just an even proposition with the vinegar factory. I proposed to get these figures for the coming session and they put it into condensed form, knowing that the figures could be obtained from individuals. Each grower for himself can determine from his net returns just exactly what it will pay him to pack of the varieties, grades and sizes that he is growing at the present time. That is the only way in which I know that we can arrive at a satisfactory solution of the problem as to "What We Shall Pack in Apples."

We have in different states state horticultural laws. I think that we can agree on some general laws in reference to what should be permitted to be packed in a box of apples. Any disease of a contagious nature or any disease which can be spread rapidly, existing in the fruit, should be prevented being packed by legislature, for instance, the codling moth. Under no circumstances should apples be packed that are infected with San Jose scale. In several states they have had laws, in the state of Washington and I think Idaho, making it essential to pack apples without scale or worm stings. Under certain conditions those laws seem to have the satisfactory effect. In the state of Washington last year there was codling moth damage possibly 20 or 25 per cent, the matter being so serious the fruit growers themselves, the very ones who helped create this law and got it passed in the legislature, were found asking to have the law temporarily recalled, which was done and the fruit growers sent out apples last year which didn't keep and being seriously infected with worm stings.

A great deal has been said advocating uniform grading rules for the Northwest. Undoubtedly you will be surprised at the stand taken on that subject. I don't believe it is possible to ever secure uniform grading rules that would be satisfactory to all of the different districts. covering all phases of grading, including color. If you had a set of uniform grading rules the same condition would arise as in Washington where the uniform grade rules would be set aside. I think the matter of grade rules is one that should be determined by each district for itself. What we should pack, what it pays us to pack, what brings back enough money to justify packing can be best determined through the sales manager of your association or by a committee from the board of any of the selling institutions. However, as I stated before I think we can have certain laws that will prevent fruit infected with any serious disease being packed in any of the grades. What we should pack in apples would also include other phases. How many grades should we pack? At the present time we are packing, extra fancy, fancy, and C grade. Some time ago I began to feel that inasmuch as each grade adds an extra expense that we would be better off if we cut one grade and limited our grades to two instead of three and now I feel justified from conditions as they seem this year in advising that the growers give this matter serious consideration. In making this suggestion I would advise putting up the extra fancy in accordance with the specifications, comply with those specifications, maintaining our present standard in a top notch sort of way. I believe we can combine the fancy and a certain proportion of the C grade and profit by so doing. I believe that at the present time that there is a proportion of C grade apples that are so poor that they simply bring back to the grower what the fruit has cost in boxes, paper, freight, etc., giving no profit. While I haven't been able to arrive at any definite conclusion I think that we could leave out a determined percentage of the C grade and combine the balance with the fancy and call it a standard grade, which would net us just as much money as if we packed fancy and C grade separately.

Inasmuch as any definite conclusion as to what we should pack in apples cannot well be ascertained until the figures that I am trying to get for you are secured, I don't feel justified in taking more of your time, and another reason for not taking more of your time is that the fruit growers of Hood River have heard me talk so much that they are getting tired hearing me. I am going to stop to allow the others on the program more time for I know they have some valuable information for you on the excellent papers which they have prepared.

Mr. Wilmer Sieg, Salem Manager Hood River Apple Growers' Association, gave a talk on "Marketing."

MARKETING.

Mr. Wilmer Sieg, Sales Manager Hood River Apple Growers'

To talk upon marketing would require a great deal more time than your excellent organization has alloted to me, and we might do like many others are doing in the Northwest, keep talking and getting nowheres, because the minute a condition arises that tends towards the good, just that minute conditions per contra come into it that operate on the good originated.

The sales strength of a district depends upon organization. Hood River's strength and the reason that it has been referred to so frequently is because it is better organized than any other district in the Northwest. The government of the United States has for two years been trying to reach out to the aid of the fruit grower, offering the most valuable services in every respect, but unfortunately this service has not accomplished its purpose for reasons we know positively, and the reasons are the shipper himself.

The government has done its best; it has spent a good deal of money through its Department of Markets and it is in position to do a wonderful good, but only when we are organized sufficiently to accept its benefits. But with fifty per cent of the tonnage drifting aside we have not reached the goal that we are after and I want to go on record as saying that fifty per cent of unattached tonnage can accomplish one hundred per cent of damage.

I am a believer in each district being sufficient to itself; I am a believer that each district raises a special product which must be pronounced if it is going to become of market value. I do not believe that any sales organization is large enough to cover the wants of districts in general and we are now at an age of speculation and the best results can only be secured for the fruit grower of the Northwest by organization, in its own district, and such organization equipped with proper sales methods.

The worst competition to the Northwest is the shipper himself and this is true of all districts. The great evil that we find at the present time is the evil of suspicion and in various districts in the Northwest we find this suspicion creeping in and when it does creep in the better elements go out; false reports seem to dominate and there seems to be always a ready ear to absorb these false reports.

It is true that in each district we have our failures, but the trouble is that this failure tries to take it out on the hide of the other fellow; probably it is a man who has been embittered by the fact that he has bought something he doesn't understand; he has worked hard and honestly to improve it probably, but despite his hardest efforts he has made a failure and we find this man the hardest fellow in the Northwest to contend with.

We have in each district the independent shipper and he is the man who is taking advantage of his fellows. A few can afford to work independently, with the majority tied up to organization, but in doing so they are not working square towards themselves or their neighbors. It is organization that has brought the values; it is organization that has created the demand for product and these independent shippers are always and will always be a menace. They spread the news of sales sometimes that sound mighty good, but the trouble is that we hear only the occasional good results, but never a word do we hear of the hundreds of failures of their marketing methods.

The solution to the Northwest is close harmony within each district to itself, and then, harmony between districts, but we first must get together at home before we can hope to do anything outside. There is no room in any district for more than one organization, any more than one postoffice, it must be an organization that can serve all. It is unfortunate that we always have dissenters, but when people learn that it is generally safe to follow the ways of the majority; when people learn that regardless of political faith they must support the government, be it Democrat or Republican; when people learn that regardless of their own personal feelings they must support the organization of their district as a whole, then we can look for the success that belongs to us.

The government has offered to us great advantages. The government has loaned us some of its brightest minds to help solve our problems, but the fifty per cent or less who have taken advantage of it have been overcome by the fifty per cent or more who have worked to the contrary, and the results have not been of benefit; and the results never will be of benefit while competition among ourselves exists.

Chairman: This is a question upon which we will not take time to ask questions. It is simply a problem that is put before you and we will now go on to the next subject before us.

Mr. Malboeuf addressed the convention on "Has High Apple Grading Paid in 1916."

HAS HIGH APPLE GRADING IN 1916 PAID?

By Charles A. Malboeuf.

As the markets at large know the Northwest apple in its present form, it hails from Washington, Idaho, Oregon and Hood River. As we old timers of the Northwest more intimately know the birth place and cradle of the modern apple grade, we know that Hood River pointed the way to our future industry. It is therefore fitting that discussions on grades should kindle their fires in this historic district, and perhaps the spirit which actuated the pioneers of apple perfection to establish rigid and unflinching grades may permeate the atmosphere of these later day gatherings, and aid us to best analyze whether those early footsteps of judgment were only prints in the sand, or worthy of being accepted as permanent when the infant industry has grown to be large.

I have been invited to speak to you on this occasion upon a subject which, were I to strictly adhere to, I believe would represent a task of no great difficulty. The question, "Has high apple grading paid in 1916?" is, I contend, amply answered by the voice of logic and intelligent experience. To review the events of 1916 as they reflect the value of high standard grades, would be to merely review the history of successful apple marketing in the Northwest, trace the progress of those successful associations and institutions that have made high grading standards their inflexible maxims, and show that the trail of ever-widening distribution was blazed by those high standards and none other. Since the subject was tendered me, however, an event of vast importance has taken place in the Northwest. Certain sections or bodies of growers, and, I add, others, are seeking to set up the fallacy, the fizzle, of high standards, and demand a radical lowering of them. Here in this hall today you have heard the suggestion made that two commercial grades only are advisable, indeed necessary, to lend greater possibilities to orchard profits. One of these grades is to be a fancy grade, stripped of its present color requirements, sweentened with "C" grade fruit, and named Fancy. Think of it! My task at this meeting was to undertake to show the urgency for high standards and prove the case by facts. If I digress from that subject therefore, and touch upon the more vital question involved in the degrading of the present grades, I trust I have both your pardon and your earnest ears.

We are face to face with this grave question today first conceived and discussed in the state of Washington. As a matter of fact it has not been brought up elsewhere, and I do not think it will be, at least in serious form. That the movement is well intentioned I do not, for one, doubt. That it is well advised I am very doubtful. That the idea is based on the hope to make more money out of the orchards, we may all believe, but in our deliberations, let us not forget the powerful maximum of commercial progressiveness which demands uniformity, dependability and unchangeability as the prime and basic value in any commodity. The demand by certain people in Washington for a material lowering of the present apple grades, upon which the Northwest has made its past reputation, appears to be on the basis that the grades have been too good in the past, that too many good apples have been packed into the lower grades, and not enough poor apples put into the better grades, and that the grower has lost money thereby. Substantially it might be put this way: "Have we not expended too much axle grease and money in perfecting our past grades, and should we not at this opportune time join the ranks of manufacturers and others who believe the dear public should pay more dearly for their product, and the same time receive an inferior article, grades considered?" If that is the intent why not reduce the size of our apple box one-half, like the 5-cent loaf of bread, and demand the same price F. O. B. as for the present standard box?

The subject, "Is high apple grading paying in 1916," in its relation to these grade questions involved, is better explained in two particular questions:

(1) Has it been possible for the grower to profitably maintain a standard of high grade apples, and dispose of the remainder for by-product purposes; or

(2) Is it possible that by lowering the grades, and consequently have less fruit to dispose of for by-product purposes he will make still more money in the aggregate?

I do not propose to launch into this deep subject single handed, and undertake to convince you one way or the other which position is correct. The subject of grades is not a new one by any means, except that at this moment it rather seeks to walk backwards in some circles and quarters—but the idea and the problem of grades has been one of continuous discussion for the last half decade, not to retrogress by the way, but to see how widespread effort could be successfully made towards general standardization of high grades. On the eve of reaching some degree of uniformity, behold, we are suddenly confronted with the argument that our past troubles have not been due to any lack of uniformity in grading, but to much uniformity in good fruit! Before expressing any experience of my own, however, I wish to call attention to certain expressions from some of the factors in Northwest circles who have always stood for high standards in grades, and who, I am certain, have not been mere trailers in the rear guard of success. These expressions made at a time when impending changes in the Washington state rules threaten to upset the entire fabric of the Northwest apple industry, are significant, and may be taken at their full value on this occasion.

The queries I put to these people are those set forth above. That you may understand the situation more clearly, the following changes are among those proposed at the recent conference held at the National Apple Show at Spokane where it was discussed:

The second grade, Grade No. 2, or "Standard" grade apples are defined as "apples complying with the requirements of first grade apples, except that slight sun scald or other blemishes not more than skin deep shall be permitted up to a total of ten per cent of the surface of the apple."

Third grade apples shall consist of apples free from infection and if shipped in closed packages shall be marked "Third Grade."

The color requirements for second grade, or Standard grade, which latter term appears to be the most endearing one to the exponents of the measure, drop with a dull thud from forty per cent to twenty-five per cent in the case of the solid red varieties; to fifteen per cent in the case of McIntosh Red; fifteen per cent for Jonathans, Staymans, Delicious, and so forth. For example, our prize Rome Beauties, Delicious, Staymans and Jonathans, which must depend upon their color to sell, are now to sally forth in the competitive markets with less than one-sixth of color and more than five-sixths green, and with one-tenth of their surfaces blemished. Stop for an instant and figure how large a spot one-tenth of the surface of a 56 Rome Beauty will be; also a Delicious; also the great ice which these apples will cut with eighty-five per cent of their surfaces an unadulterated green! Think of that, I say!

Now then, here is what a few leaders in the Northwest apple industry state in response to the two queries:

Mr. Sieg has made his statement on the floor; he declares the Fancy grade must not be lowered at any cost unless we want to sell the so-called Standard grade for vinegar purposes only.

Mr. W. F. Gwin, Vice-President Northwestern Fruit Exchange: "I subscribe emphatically to the first of your two alternatives. I think the grading rules as they were last year are about right. There may be some minor improvements possible, but on the whole I certainly believe that adherence to strict grading rules is absolutely essential if the industry is to survive."

Mr. L. J. Blot, Sales Manager, Spokane Fruit Growers Company: "From the standpoint of maintaining their reputation, and being able to compete in the larger markets on the Atlantic coast, it has been absolutely essential to maintain a high standard grade. Had our grades been lowered, we would have severed the chance of entering those markets for the future. The Northwest apple industry can only survive in the face of all other difficulties in maintaining its grades. If our grades are lowered, we cannot expect to ship our apples, especially our Fancy and Choice grades, east of the Missouri River. When you stop to consider in the apple growing districts of the Middle West and South where millions of barrels are raised and where, in the last two or three years, they have started to take care of their trees, they have freight rates into the individual markets of from fifteen to twenty cents a hundred against our rate of close to one dollar, their fruit being equal to the grade that we would put out if our grades were lowered, how on earth could we expect to compete against such odds. When you stop to think that we would have to market this class of fruit in the limited territory of the Dakotas, Montana and the western part of Canada, you will see the folly of such rules, as it is safe to say that the territory mentioned could probably take to good advantage during a season not more than three thousand cars."

Mr. R. D. Chatfield, Manager, Mosier Fruit Growers Association: "My answer to your first question is YES, to the second NO. We have been able to secure better prices, and return more money to the grower for his entire crop by maintaining very strict grades, and we would not consider lowering them."

I reserved Mr. Chatfield's expression for the last one, because I have a reason. When I think of the Mosier association, it always reminds me of a self-made man. They have made good and that's the highest tribute to any man or institution. They made good primarily by a most rigid maintenance of high grading rules, more rigid year after year. Apple growing has paid at Mosier because of that practice by the growers. Do they want to lower the grades in the face of accomplishments under the present order of things? Mr. Chatfield says positively No in capital letters. That's all, and the voice of that small association is, because of their past performances and results, loud enough to be heard and felt all over the Northwest. I regret that I did not hear from the Cashmere Fruit Growers Union, another of the brilliant stars in the constellation of Northwest appledom. For six solid years, the Cashmere Union has taken the same course as Mosier, traveled the same path of rigid and unflinching grades; they too have made good, for the same reasons. Like Mosier their management has been a fixed one for years, their policies alike in progressive efficiency, and that efficiency has always had as its basis high standard grades. If we had no other examples to seek in the Northwest, no other expressions of experience to repeat, I would ask no better illustrations of intelligent procedure, and mature judgment, than from these two bodies.

The essence of the new rules is that by making the Fancy grade several degrees lower than at present, with much less color, a much greater area of blemishes, and mixing with it apples which under the existing laws of Washington belong to "C" grade, the grower can on the whole make more money. I wonder if the prime movers for the change really believe, in their own minds, that the mere word "Fancy" or "Standard" on the box will insure the same values as the higher Fancy grade does today. Mr. Blot mentions the three thousand odd cars which annually go into the prairie markets of the Dakotas and the western provinces of Canada. Are we to swallow the idea that the trade there, which for years has sought the best "C" grades obtainable in Washington, is going to pay more money for the new Fancy, because the new "C" grade will be too low in standard for their use? If not, what will be the value for the new grade to be forced upon them; will it be the old "C" grade value, or the old Fancy value, or a mixture of the two? I think reason will speak in answering this question, but more seriously believe that if the standard grades of Washington for 1917 should provide the lowered Fancy, it will be worth either that of the former "C" grade, or that the dealers in the vast territories where "C" grades have been so extensively used in the past, will have a grade similar to the former "C" grade packed for their special benefit, making it a non-standard pack, if you please, so far as the laws are concerned. It is the contents of the box that count for anything; the name printed outside cuts little or no figure.

We all know that the Middle West, the country lying between the Mississippi River and the Rocky Mountains, from the Dakotas to the Mexican Gulf, is where the Northwest must depend to move the bulk of its Fancy grade. Incidentally we all know that in that territory the box apple meets more actual and relative competition both from box and barrel apples, than it does east of the Mississippi River, where 75 per cent of the national apple crops are grown. The Missouri barrel apple, the bulk and shovel apple from Missouri, the Iowa, Illinois, Arkansas, Kansas, Texas apples, without mentioning those from Colorado, all cut directly across our path in years of large crops in those sections. We all remember what the blood red Jonathans of Southern Illinois did to our present grade Jonathans in 1915, and those who visited the National Apple Show at Spokane this season got a clear idea what quality exists in those eastern Jonathans. I would like to know what a fifteen per cent colored Northwest Jonathan will do against that competition in other seasons like 1915. With our heavy freight handicaps, it is doubtful if we could get barrel apple prices delivered in those competitive markets. In the judgment of many those barrel apples displayed at Spokane were not far from equaling our present Fancy grade in general conditions, and that the color was unbeatable. I have yet to meet the man who is willing to claim our "C" grade apples can hold a candle to them. What in the name of common sense is the use of talking about matching a grade possessed of not much better than "C" grade limitations, with apples that swept us off our feet with a vastly better grade in 1915, and kept us out of certain portions of the Middle West almost entirely for a matter of weeks that season?

Those who have visited the Grand Valley in Colorado, and impartially measured the quality of their apples, especially the color of their Jonathans and Winesaps, in which that district predominates, realize the force of their competition. Colorado with something like seven thousand cars in 1914 practically dominated the Kansas, Nebraska, Texas and other southwestern states, and with a much lower freight rate than our own, came through the season, that is the efficient organizations did, with a better average than we did on the competitive varieties. It was not because the average grades from the Northwest that year were high standard that Colorado came out best. It was because, as the case has been year after year, too many shipments from the Northwest were low in standard, and regardless of the percentage of latter in comparison with the total tonnage marketed by us, it was that low standard, plus inefficient marketing efforts, that placed unsurmountable obstacles in front of the better controlled and better graded shipments.

Now in the same connection, and discussing uniform grades and high standards in the same breath, it is pertinent to go back over the course of the past few years, and see for ourselves just what part both these features have played in the progress of our industry since 1910, when we first recognized that the job of marketing our crops was a bigger one than most people realized. We must not forget that this all-important subject of uniform grades was not mentioned for several years, that is, as a matter of necessity, until recently, which means that as we met and disposed of one requisite after another and found that with each one was coupled an equivalent necessity for progress in grades, we gradually became confronted with the cold fact that after all a standardization of grades the Northwest over was essential.

Successful marketing in recent years has been made possible only with a high-grade standard as the basis, and today those successful organizations and associations are the ones with which high rigid grades have been fundamental. The poorer grades, and the less successful organizations using them, have invariably walked in the rear of the successful organizations having the highest grade standards. Does any one profess to say that the present established trade of the Northwest apple has been builded upon indiscriminate grade rules and their application? If it were built on the ideals of half way measures in grade rules, and on the individual grade notions which prevailed prior to 1910, can any one explain why up to that year inclusive, not more than 100 to 125 markets were buying Northwest box apples throughout this nation and foreign countries, whereas in 1915 close to 800 different carload markets knew, bought, consumed and distributed them. I want to know whether a high standard grade or a bum grade helped most potently to build up that distribution?

There has been an insistent demand throughout the Northwest for the last couple of years for a closer drawing together of all districts and states towards a common basis, and this demand has reflected the necessity for a better and more standardized product. The experience of each year, measured soberly after the windup, has invariably pointed to lack of uniformly high grades as the reason for failing to make good in many markets. I think the Northwest in a large sense has realized that uniform grades, based on high standards, are essential to more stable conditions right here at home, and equally so in the marketing territory. Mr. Shepard expresses his belief today that we will never have uniform grades. I do not agree with him when he makes this statement, coupled with his advocacy for a lowering of the Fancy grades and dispensing with the "C" grade altogether. Nor can I harmonize with Mr. Sieg's declaration that, while he believes implicitly in a high standard of grade, it is also his opinion that a uniform grading basis throughout the Northwest is both impossible and non-essential; that each district can best stand upon its own bottom and forget its neighbors. In my judgment we must continue in our efforts to secure a uniform grade rule basis throughout the Northwest, and I am convinced that pending such action by the four states in harmony, each state should endeavor to adopt standards such as are necessitated by trade requirements.

President: We have only one more duty to perform this evening. It will require a very little time to elect officers for this Association. We will proceed with the election of officers for the ensuing year. We have a president, a vice-president, a secretary-treasurer, and one member of the board of trustees to elect.

Mr. Minton: I would like to state that the election according to our constitution and by-laws must be held in Portland, but we can recommend these men for election in Portland. That has been our rule when we have held these elections in other places than in Portland. It is necessary that we hold the final election in Portland.

C. A. Park: At this time I wish to thank you in behalf of Salem for deciding to hold the 1917 session at the Capital City. The incoming president ought to be a man from Salem, and I think it is customary to elect the president from the point where the next convention is to be held, as there are many duties that must be attended to, therefore I place in nomination or recommend that Mr. Paulus be elected.

Mr. Paulus: I suggest Mr. McNary as our next president.

Mr. Parks: I don't coincide with Mr. Paulus.

Nomination was seconded and Mr. Paulus was recommended as president to be elected in Portland.

Mr. Paulus: I wish to thank the members for the honor they have conferred upon me and I will assure them that I will do everything in my power to make the meeting a success next year.

Chairman: The next nomination is for vice-president. Who will you nominate for vice-president?

Prof. Gardner: I nominate Dr. Bailey. I would like to see the vegetable interests represented.

Dr. Bailey: I don't pose as a vegetable man. I have forty acres of orchard of my own, and four acres of broccoli. A man with forty acres of orchard is entitled to be called an orchard man.

Mr. Minton: I second the nomination, and move the ballot be cast for Dr. Bailey.

Motion prevailed. Dr. Bailey was recommended for election for vice-president for the ensuring year.

Mr. Minton was recommended for election as secretary-treasurer.

Mr. Williamson seconded the motion.

Mr. Minton: I am glad at least that the rest of you are as crazy as I am as you have shown by re-electing me. I do have lucid moments and one of those was when I asked Shepherd to give a talk on grading, and if this meeting hasn't accomplished anything else than to impress on the growers the fact that they can get more money out of their cheap grade of apples sending them to the cider mill and cannery, then I am willing to stay crazy all the rest of my life.

Chairman: We have one more nomination. Mr. Bateham's term as trustee expires this year. I move he be re-elected.

Nomination was seconded and Mr. Bateham was recommended for election in Portland.

A. I. Mason: Mr. Chairman, I would like to make an announcement and an apology. I haven't been able to attend the meeting until today and will not be able to attend tomorrow, but I want to give you each an invitation to visit my packing plant. I have one of the few now in operation and if you haven't seen one it is worth your while to come. We would be glad to have you come if you can find a way to get out there.

Chairman: I wish to appoint as a committee on resolutions: Mr. Pomeray, Mr. Shepherd, and Mr. Williamson and request them to report on Wednesday.

Wednesday Morning, December 13, 1916

Meeting called to order by J. L. Carter, chairman.

Chairman: We will have the report of the Publicity Committee. Mr. Johnson is not here to read, so the secretary will read.

Mr. Minton read the report.

REPORT OF THE PUBLICITY COMMITTEE

By B. W. Johnson

To the Officers and Members of the State Horticultural Society, Greeting:

Immediately upon receiving notice of my appointment as Chairman of the Publicity Committee of this Society, I began an active correspondence campaign with the other members of the committee (consisting of E. H. Shepard, Hood River; M. McDonald, Orenco; S. V. Beckwith, Medford, and C. E. Roberts, Lebanon) and such other members of the Society, particularly C. I. Lewis, head of the Department of Horticulture at the Oregon Agricultural College, and H. B. Miller of the School of Commerce at the University of Oregon, as I thought might be able to give the committee helpful suggestions.

After having assembled the information collected by correspondence, a meeting of the committee was called to be held at the Oregon Hotel in Portland Saturday afternoon, January 29. At this meeting, Mr. McDonald, Mr. Shepard and the chairman were present. Letters of regret were read from Messrs Beckwith and Roberts advising of their inability to be present.

At the beginning of the committee meeting there was a general discussion as to what the general scope and purpose of the committee's work should cover. It was decided that our work was not in any sense to be national in character, but that the main object for consideration was "How to increase consumption of Oregon fruits in Oregon." Mr. Shepard stated that the commercial pack of Oregon fruits this year was about 2000 cars, and gave it as his opinion that by means of effective publicity and proper methods of distribution, practically the entire output of the state should be consumed within its borders.

The suggestion was made that the various marketing organizations be encouraged to send traveling men to all the small towns in their respective territories and take orders for any sized lots that might be desired. Mr. McDonald called particular attention to the fact that outside of the larger towns, where dealers might be handling car-lot shipments, it is practically impossible to obtain a decent eating-apple, or other Oregon fruit. In all of these small towns, however, oranges and often grape fruit and many varieties of California dried fruits were to be obtained. He gave it as his opinion that a great many apples and other Oregon fruits would be consumed in these smaller places if dealers could obtain them in small quantities at reasonable cost.

Another thing that was discussed quite in detail was the ignorance of the average user of fruits as to the quality, adaptability and time for use of the various varieties, especially apples and pears. It was the unanimous opinion of the committee that an effort should be made to inform the fruit-consuming public as to the qualities and time for use of the leading commercial varieties. If this were done, it was thought that apples like the Ben Davis, for instance, would not be in competition during the fall and winter months with Jonathans, Grimes, Ortleys and Spys, but would be kept until April or May, when the Ben Davis is more edible. It was, also, in this connection, thought advisable that the grocerymen of the state be advised regarding the different varieties and their proper time for consumption.

It also was the opinion of the committee that the co-operation of the various railroad lines in Oregon be obtained in an effort to prevent in the future the sale of inferior fruit on the trains. During the past year, while thousands of tourists were traveling through the state, the average "peanut butcher" was selling wormy, scabby, and altogether an inferior quality of fruit. As a matter of state pride, growers of fruit within the state should insist vigorously that only the very best quality of fruits be placed on sale on the trains and the fruit stands.

To carry out the general ideas outlined, it was the opinion of the committee that early in the spring—not later than June first—a news service should be established under the direction of the Society and maintained at least until the end of the year, and preferably throughout the year. It was thought that this work should be handled by a competent and experienced newspaper man who would send weekly news letters to the press of the state, and, from time to time, letters to the grocerymen and to the hotels and restaurants, of which there are some 5000 in Oregon.

Mr. Johnson, of the committee, was requested to ascertain, if possible, the number of hotel keepers and grocerymen of the state, to make an estimate of the probable cost of the suggested news service for a period of six months, which, together with the recommendation of the committee as outlined above, be set out in a tentative report and mailed to each member of the committee and to other prominent members of the Society for discussion, alteration and suggestion.

After returning home, the information as to the number of newspapers, hotel men and grocerymen was ascertained. In outlining an advertising campaign, it was thought advisable at the beginning that a personal letter be written to the 300 newspapers, the 2400 hotel men and the 2600 grocerymen in the state, seeking to enlist their co-operation looking to a better distribution and a larger consumption of Oregon fruits in Oregon. The postage on these 5300 letters would have been $106. The other estimated expenses were: Typewriting 5300 letters at beginning of campaign, $100; mailing same, $25; paper and envelopes for same, $20. Following this letter, it was thought by the committee that some sort of bulletin or news service should be maintained with the hotels and grocerymen as often as once a month. To do this, the postage would be on 5000 copies at 1 cent each, $50 per month, or $300 for the six months. Postage on weekly news service to 300 newspapers at $3 a week for a period of 26 weeks, would amount to $78. Mimeographing and mailing 300 news letters, $2.50 per week for 26 weeks, $65. For the news service over a period of six months would require approximately 40,000 envelopes at $1.50 per thousand, or $60. To prepare a weekly news service, to look after the mailings and see that the work was kept up and attended to properly, I assumed for the purpose of the estimate that the cost would not exceed $50 per month, or $300 for the period.

Recapitulation.

Postage on 5300 letters	$ 106
Typewriting 5300 letters	100
Mailing 5300 letters	25
Paper and envelopes for same	20
Postage on bulletin or news service maintained with hotels and grocerymen	300
Postage on news service to newspapers	78
Mimeographing and mailing 300 news letters	65
40,000 envelopes for news service	60
Preparation and maintenance of news service	300
Total	$1054

At the meeting of the committee, some suggestions were talked over with reference to the raising of the money necessary in carrying out this advertising campaign. It was the desire of the committee that all the various horticultural interests be helped as much as possible through the proposed publicity movement, and that the walnut interests, the loganberry juice manufacturers, and the various local associations of fruit growers might be willing to contribute from ten to one hundred dollars each, and that the balance of the expense might be borne by the Horticultural Society.

After collecting the data and making an estimate of the cost of a suitable publicity campaign, the foregoing statement was mailed to all members of the committee, to the officers and some other members of the Society, inviting criticism, further suggestion, or approval of the committee's plan. The response was quite generous and without exception the plan was approved by those who replied. The matter was then put up to the president with a strong recommendation that the campaign begin on June 1st, and that if the funds of the Society were unavailable for this purpose, that some other means be devised for raising the necessary money with which to conduct the campaign. After more or less correspondence, it was thought inadvisable by the president to call a meeting for the purpose of devising ways and means, so the matter dropped, and, as a matter of fact, the time, effort and expense of the committee was really wasted.

There may be ways of conducting a publicity campaign without money, but I submit that I have never had experience in that sort of publicity. Had the committee been aware at the outset that no funds were available for this purpose, it probably would have been less active in the matter. Now, however, that a plan has been devised and an estimate made of its cost, the Society may see the wisdom of securing the necessary fund to carry out the committee's recommendation.

Chairman: You have heard the report. Mr. McDonald, we would like to hear what you have to say of that report.

Mr. McDonald: The report speaks for itself. When we got everything together we found that we had no money to carry on a publicity campaign. So there you are. The committee did the very best we could and we couldn't go any farther without funds of some character. We have had a very pleasing meeting here. We have heard a great deal about marketing, etc., but the foundation of all this work should be the increased consumption of the product and to increase consumption we must get to the real consumer. We ought to begin that campaign in Oregon because the Oregon people are not consuming anywhere near their capacity of our own Oregon fruits. But to carry on a campaign of this kind you must have money. It seems as though the fruit associations that you have here in the state ought to formulate some plan whereby there would be contributed out of the proceeds of the sale of the fruit, funds to carry on a campaign of this character. The report is exactly as the program was carried out so there is nothing I can add to that. The only thing I would like to say is that we should grease this machinery that has been set up to carry on the campaign.

Mr. Shepherd: I haven't very much to say in addition to that report because the report was written after a very thorough discussion of the subject by Mr. McDonald, Mr. Johnson and myself at the Oregon Hotel in Portland sometime last winter in which we put in some four or five hours, each having given the matter a good deal of thought and consideration before. There is no question about the importance of some action being taken within our own state to increase consumption.

Publicity and salesmanship are the two factors that will accomplish more for us than anything else we can do. That something can be done is apparent by many comparisons. The loganberry people found themselves in the position of having a product and no market. The loganberry buyers placed the matter in the hands of the wholesalers in eastern cities like New York, and I think Minneapolis or St. Paul. They created a small fund, just a few hundred dollars with which they entered into an advertising campaign getting out cards and running in the newspapers very small articles, and in a short time the entire production of loganberries that was in the hands of the wholesaler in New York City was consumed. Now in reference to the production of apples in our home state, I obtained a couple of years ago figures from the inspector at Seattle ascertaining that that city alone in that year consumed 883 carloads of apples with a population of 300,000. In the state of Oregon we have about 900,000 people or about three times as many people in the state as there are in the city of Seattle. If we would consume them at the same ratio we would consume 2400 carloads. I should say it would consume approximately 3000 carloads. There are any number of illustrations just like that to show that the consumption could be increased within our own state. There is a better opportunity to sell apples within our own state than we realized. First they can be sold cheaper than in any of the eastern cities. We can at least save the freight. My point is that a man in business or a man working for a salary of $100 or $150 a month has just exactly the same purchasing capacity in Portland or Salem as in any city in the east. If we can save the freight without adding it to the cost to the consumer, then we are putting our apples on the market in this state at a much less figure than we are putting them on the market in eastern states and thereby our sales and the consumption of apples ought to be greater within our state than in eastern cities, that is, the consumption in proportion to the population. You all know that if you travel through the state of Oregon and visit these small towns all the way from 5000 to 10,000 population, it is a rare occurrence to see good apples on the market. I know that people buy those apples, they will buy good apples if they are on the market to be bought and it is a matter that is important that they get good apples and some action ought to be taken if it is possible to pave the way for the proper kind of a campaign put on to increase consumption in the state of Oregon of good Oregon apples.

Chairman: This is certainly an important thing. Oregon people should consume more of our good apples and the quicker we get them to them the sooner they will become acquainted with the real Oregon apple.

Mr. Harris: I would like to add one or two things before we go any farther. There are very few people in the United States who are using them to a considerable quantity and I found what I considered a reasonably good excuse for that. As near as I can determine there are twenty-three women in the United States who prepare and furnish to all the great newspapers the bulk of the Sunday cooking material that goes into the hands of the housewives. They recommend all the cooking and they knock all the cooking. One of these women is with the Chicago Tribune and she handles a great mass of material and there is a woman who in her correspondence with me in the last year has told me that she has been unable to get from any source the apple dope that she has gotten from me. I have furnished her five or six hundred recipes. These recipes have been used in nearly all the large Sunday papers. I have written to every foreign country except China and

Japan and have a great collection of those recipes and there are about 700 of them that have never been used in this country. I furnished this woman about 500 recipes that have never been used in this country and she is using a lot of those in the papers like the Chicago Tribune on their Woman's Pages on Sunday. It cost me a lot of money, but I tell you that this is great advertising, and until you have gone into it nobody realizes the great possibilities. I tell you that those twenty-three women are of more importance today in handling the material for women than all the paid advertising you can get in the Saturday Evening Post for the next two years because they are the people who say that this menu is good and it is followed. Take for instance Lillian Tingle in Portland. She is the best domestic science expert on the Pacific Coast and she will tell you, as she told me, that she has never gotten the results out of apples that she wants to get. About February or March I came up from Portland to Hood River and I took up, with the Hood River Apple Growers Association, the advisability of printing these recipes, because I believe that there is no help that can come from without. I realize that I am an interloper in this deal, but I have one definitely fixed purpose. I have twenty-one or twenty-two acres of apple orchard that cost me a lot of money, so I am not exactly an interloper. I came up to Hood River and I said to the manager of the association, "Here is the possibility of this whole thing," and I have gone into the project a good deal farther than this committee and I showed this committee that the work you want to do can't be done for $1000. If I can put the job over, that is all I want to do and I am willing to do it, without a cent for myself, if somebody will take care of the rest of the expenses, because the satisfaction that I will get out of putting over a job as big as this will be worth more to me than any pay I might get for it. If you will furnish money to take care of the office expenses, I'll show you the advertising we have gotten out of this won't cost you 10 cents an inch." Well they fished around three or four weeks and finally determined that they couldn't spend any money on it. Any who have been watching the California papers the last month will discover the paid advertising of the Hood River Apple Growers Association. I take it for granted that there are five or six sources of information in this country that should be used in the state of Oregon. I think there are fifty or sixty domestic science teachers in the state. Every grower in the state, every restaurant keeper, every hotel keeper, every one of the men who buy for the dining cars, should be dealt with directly by this organization and I had a plan of reaching them all and taking care of the effort in the East to impress upon those twenty-three women, particularly, the necessity of using the apple. Help of this sort must come from within, it can't come from without and if the man raising the apples isn't willing to pay the price he will never get the result. It is an easy matter to put over a proposition of that sort and reach these people quickly but it is going to cost money to get results. The Hood River people won't send us any apples, they send them on to New York. We just scrape along with what we can get and do just what we can and still we complain about our car shortage when we coulan't get a car if we had to and allow our apples to stay here and freeze when there are a hundred thousand people waiting to buy those apples. It is a condition that should be met in some way or other.

Mr. McDonald: I think the time has come for some action. I am going to make a proposition right now, and I am going to say that I think the mony should be raised and put into the hands of Mr. Harris to carry out this program. I move that action be taken along this line. I will pledge the Nurserymen's Association to subscribe at least $100 to this fund as a starter. I would like to have this Association take up this work to furnish funds to carry on this campaign and I am willing to pledge $100 from the Nurserymen of the Northwest right now.

Mr. Norton: In order to raise campaign money, I move that a committee be appointed in different sections of the state to further the campaign, and try and get subscriptions to that fund.

Chairman: You have heard the motion. Is there anything further to say upon it. It is in the right line and as Mr. Norton has suggested it should be distributed over the state. What will be your pleasure in this regard. First we will put the motion before you and then it will be for you to arrange for the committee.

The motion prevailed.

Chairman: I would like to see you have that committee selected wisely and I don't know how you will do that. You want a committee that will not be too large, but that will do something.

Mr. Shepard: I have just one suggestion to make in reference to the selection of that committee. Unless a man is really in sympathy with the work it is useless to put him on the committee. To appoint a committee here at the present time would be, I think, rather an unwise proceeding and probably would result in a committee that would not accomplish anything. I have this suggestion to offer, that the size of that committee and the men to be appointed on that committee be left with the secretary who can consult with anybody he sees fit to, particularly with Mr. Harris. He can make his appointments and find out if the men appointed are willing to work and anxious to do something and in that way make appointments that can do something. I simply offer this as a suggestion. I believe in that way you could get a committee that would be active.

Mr. Bachelder: I believe as has been said that a large committee wouldn't be effective. I suggest that the committee be not less than three nor more than five, at the discretion of the secretary or the executive committee.

Mr. Minton: The original thought was to appoint a committee for each section of the state.

Member: I understood it was to be a general committee for the whole state.

Mr. McDonald: Why wouldn't it be a good idea to have a small committee that can centralize itself and let them add workers in the different districts, and if one man in a district won't do the work they want done, let the committee find someone else. Let the head of all this work be a small working committee that can meet occasionally and carry out the work of this committee.

Chairman: Is that to be left with the Executive Committee?

Mr. Minton: The Executive Committee would be all right except it is badly scattered. I think if we are going to get effective work we had better put that committee where they can be within telephone call.

Mr. Bateham: I think the general committee ought to be appointed either as suggested, after consideration by the secretary or the president (the usual way is for the president), but one way or the other get it down to pure effectiveness on this one subject.

Chairman: I don't want to take the responsibility of doing that. I think this is one of the most important things that has come to the

Society. We want the most efficient men we can get on it. We don't want a large committee, we want to get the men that are effective. I think it is a good suggestion, too, that that committee be selected near to Portland. There is a place where, we must acknowledge, we get things done.

Mr. Paulus: I believe it would be well to have Mr. Minton and Mr. Harris work that situation out. Mr. Harris has talked to many and he knows who would be in favor of this and who would co-operate and in that way we could get people who would work with them instead of pulling back.

Mr. Cordley: I feel that Mr. Harris has suggested the most practical method of increasing consumption of apples; that is by distributing information in regard to their cooking qualities. I think that one amendment should be made is, that with the recipes sent out should go the name of the particular apple to be used in that particular recipe. If the housewife can have information regarding it I feel confident that it will very greatly increase the consumption of apples. I make a motion that Mr. Harris be made chairman.

The motion was seconded.

Mr. Sheperd: Prof. Cordley has struck the key-note in this apple business. The increased consumption of apples is going to come from the sale of apples for desserts. It will not come from the increased sale to be consumed fresh. I venture to say there are ten men who will eat a baked apple to one who will eat a fresh one. I realized this as far back as the year 1909. I published in the 1909 edition of Better Fruits, recipes for the use of apples. The recipes were all tried and tested out by a domestic science teacher. From her I secured the privilege to publish those recipes and paid her for the same. It was five years afterwards that I made arrangements to publish those recipes in a book called "199 Ways of Serving Apples as Dessert." One year afterwards the O.-W. R. & N. and the Northern Pacific woke up and each of those companies published pamphlets containing a number of recipes for cooking apples and serving them in various ways. To show you that that is a proper idea and would be acceptable as news by the newspapers as Mr. Harris stated, that number of Better Fruit was quoted by papers all the way from here to the Atlantic Ocean, and quoted by the Kansas City Times, with a column and a half of recipes with an editor's note about this edition of Better Fruit. Just as Mr. Harris said that kind of publicity work will reach more people and it won't cost us anything if you can get by the man who edits the paper.

Mr. Harris: I certainly don't want to take on any more loads than I need to take on. I don't want to be on that committee at all. I don't think that is the line of work in which I can excel. I think that a committee should come from the body of this organization, I don't think I can do it better than any other fellow. I have had all my orchard work done by Agricultural College students and I want to keep a couple of fellows for another year or two more. I am perfectly willing to take my end of the work. In the second place I don't think I am the man to do that sort of thing.

Mr. McDonald: Let a committee be formed to secure this money and place it in the hands of Mr. Harris to do this work he said he would do if he had the money to carry it on. He is going to do the publicity work as I understand. The business of this committee is to get the money and it will be his money to spend judiciously in this publicity campaign.

Dean Cordley: I withdraw my motion for Mr. Harris as chairman.

Chairman: I want this committee selected very carefully and judiciously.

Mr. Bateham: I second the motion that a committee of three be appointed by the secretary.

Chairman: A committee of three be appointed by the secretary of this session, for the purpose of securing the money for this publicity purpose. The motion is before you. Are there any further motions or suggestions?

The motion was carried.

Mr. Gilbert: I want to mention the action that was resorted to by the prune men in 1903. The loganberry men three years ago devoted a certain percentage of their sale to publicity and as a result of the beginning made at that time, today the demand exceeds the supply and as a result of the efforts of the loganberry pool they could sell more dry berries than they had to sell. It occurred to me that if this committee could approach the apple pools that it would be a very direct way for them to put it over and get some money for publicity.

Mr. McDonald: So as to have this matter entirely clear I think we should have another motion from this society putting the distribution of this money into Mr. Harris' hands and in order to make it clear I would move that this committee place the money that they raise in the hands of Mr. Harris for his dispensation for this purpose and that reports come back from the committee as to the disposition of the money to be presented at the next meeting.

Member: How much money is to be raised? This committee will want to know what they are up against.

Mr. Harris: Before you make haste in this matter I would like to have you stop and think a few minutes. I would rather you wouldn't put that money into my hands. I can get away with money and I can spend it and get good results. I think it should go into the hands of the committee and that I should be held responsible to the committee and that the committee should be held responsible to this body and it should not be in anybody's hands.

Mr. McDonald: I will withdraw the motion and let it stand that way.

Chairman: Now gentlemen, I think we have devoted what time we can to that and in accomplishing what we have I think we have accomplished a good deal this session. I am requested to appoint a committee on "Needed Legislation." It has stood during the last years as Mr. Bateham, Mr. McNary, Mr. Roberts, Mr. McDonald, and Dr. Macrum. I am going, with your permission, to appoint the same committee that has been in force the past year, with one exception. I will place Mr. Reynolds of Salem in this committee in place of Mr. Roberts. Mr. Reynolds has been a member of the Legislature and is a quiet but efficient man.

Chairman: Hood River doesn't aim to do things in a mean way. Generally when we have a convention here we try to arrange to take the people out over the Valley. We have good roads in the summer time, but we have very bad roads just now and therefore we can't take you around the valley. I am sure Mr. Paulus has already assured us if we go down there that we are going to be well treated at Salem. I want to say this by way of apology, that many people here are just getting through with their crops. I saw a man this morning whose one two-horse team brought into Hood River a load of 199 boxes of apples. They are just as busy as they can be. Some of the big growers are not through yet. They are all hurrying to get their work finished. I want to say that by way of apology for the lack of attendance of the fruit growers of Hood River Valley. Our merchants and bankers would be glad to meet and entertain you. They do that here sometimes. Don't think that we are so little that we can't do such things. But this time it is up to the fruit growers. It is not the bankers' or the business men's fault.

Mr. A. C. Allen spoke on "Orchard Inspection and Law Enforcement."

ORCHARD INSPECTION AND LAW ENFORCEMENT.

By Mr. A. C. Allen.

I see I am down for "Orchard Inspection and Law Enforcement." Mr. Minton asked me if I had my paper ready. I confess I haven't. This subject is a very long one to discuss and for that reason I hardly have known what to say and on account of that and the short time I am going to limit my talk to one phase with which I have had a great deal of experience in and which may interest you here. That is on blight, fire blight, the manner in which we handle it, and I am going to limit that to one county, Jackson County.

The first thing in either orchard inspection or law enforcement is one that you have heard in every phase of business, and that is co-operation. You may think that to make a law, and to appoint officers to enforce it is all that is necessary, but we have found that co-operation is the basis of even law enforcement, in other words if we have not the co-operation of the grower, of the tax payer, and of the county court, that we can accomplish practically nothing. Jackson County has perhaps more orchards in a small area than any other district in the state. We have 2200 acres of orchard in a congested district, the trees are very close together. Now in this district we find about the same conditions as obtained in a big city, that contagious diseases are more numerous, also we are nearer to one of the oldest fruit producing sections in the West than any other part of Oregon, we are right next to California. Whatever California has is more than likely to reach us before it reaches you. The paramount industry, or the industry which is paramount, in Southern Oregon, is the fruit industry. We have a great many other industries which are undeveloped. We know we must protect the fruit industry in Jackson County or we are going to lose the biggest one we have. Therefore the people have gotten together on that subject. Though we may lack co-operation in others we are solid on law enforcement.

A few years ago we had one inspector. He was trying to do something, trying to keep things in shape, and I remember when he called some of the leading growers together and told them that something had to be done or we were going to get in trouble, so he issued a call and we were all excited over it to the extent that four growers attended the meeting. We got down there and he told us we were going to have blight, this, that and the other. Blight to me meant something that I can think of today and take care of it next year. He said that if he couldn't have the growers behind him that nothing could be accomplished. We said we were right behind him and we were so far that he never did see us.

We couldn't have blight, it's impossible. I am beginning to think now that if there is anything on earth we can't have I would like to know what it is. We have been studying the subject of blight very closely for the last year or two. We still have our advocates of the cause of blight. Some of them still believe that blight is caused by lightning, some by frosts. The other day when the county court met to discuss the budget for the year, one of our men who is a banker and one of the leading growers made the statement that he knew blight was not an infection and asked that all inspections be wiped out. We always find when a man makes this statement that the inspectors have had to forcibly clean his orchard for him. After we had had this meeting with the inspector things went on for a number of years and one day we had an awful epidemic of sour sap. One man cut his trees down the body with a knife and in order to save them he split the bark not only of the affected trees, but he also split the bark of those that were not affected so as to save them too. Well that time sour sap was evidently infectious. He infected every tree that wasn't infected because it was nothing but fire blight pure and simple. We heard about it and we went down out of curiosity to see it. In my orchard I had some sour sap trees that I had left to get well if they could. I had the nucleus for complete destruction in my own orchard. We got busy; we do things in Southern Oregon. We started in on inspection and it ended in our spending the sum of $15,000 to $18,000 for inspection. Two years ago when I was appointed as commissioner I found thirteen inspectors on the pay rolls in Jackson County, an expenditure of $15,000. We were getting our raps, we weren't making all the money in the world that we thought we were going to make and we needed to curtail expenses. We cut down the inspectoin force to four, saving about $9000 a year. We then started in on a business system of inspection and limited our efforts to inspection only. Heretofore they had been going around in fives or sixes and the county paid the bill. We changed that and made the inspectors policemen only. Today we have four inspectors, the pathologist and the entomologist. That is six men. The appropriation is about $6000 a year. We realized the necessity of keeping the fruit in our district on its feet. We didn't let the bankers and merchants stand out and say, "It's your funeral." We told them that it was their business and they had to stand behind us or we couldn't buy anything from them and we wouldn't. We went over to the county court, but we couldn't talk to them because they were above us, they were not our servants, but election was only a short ways off. We took two members out that time and put in two members who were fruit growers and business men. Those men have stood by us and since then we have changed things and we have a county court of business men, who co-operate with us, who, when we walk in, call them by their first names. This year when the budget came up we didn't have to send a committee for that. A committee was appointed who went before the county court and asked for an increase in this budget. The county court notified them that if the fruit industry needed more money they would find a way to raise it. Since then we have had no trouble. We have got them educated. We found that one of our greatest menaces was the little tree in the back yard. These fellows with half-acre orchards, and all of that—it was the dirtiest mess, not only blight but all other diseases. We have a law by which we can condemn and destroy and we use it when it is necessary, but we had another scheme. We found that the assessed valuation of orchard land was considerably higher than farm land, the same land without orchards. We figured this on a basis at that time that they were assessing on an average orchard tract, each tree at an average of about $10. We notified the assessor that if he assessed our trees for $10 he couldn't let Tom

Jones' tree go because he was playing with it, that that was worth $10 also. As a result he formed a schedule of $10 for single trees which he assessed on every tree in the county. I want to say that eliminated a large number of trees. I knew some men that had twenty trees and when they found that they would be assesssed $200 for those trees, they said they would cut them down first. We eliminated a lot of those trees in that way and we still insist that you can't raise a tree in Jackson County and play with it. This is one of the results we got with co-operation and we had the co-operation of the assessor's office.

We would be perfectly satisfied to make no inspections if we could keep blight within the fences of those growers who have it. It is the man who is working hard who has to pay for it, the other fellow doesn't care. We insist every year on account of our congested district that there be a thorough clean-up and we realize that it can be done only by co-operation of the growers. We may take some of the orchards and make object lessons of them. You have got to have co-operation and we have finally succeeded in getting it. Pear blight, you may think, will not affect you. It travels in waves. We found last year in sections where we had compelled a thorough root cleaning—I should say influenced a thorough root cleaning—that is every tree had the soil dug away from the crown and where they found blight they had that cleaned up and then a thorough cleaning of the tops. The growers of that district did not worry when the epidemic came this year. You may think that it is absolutely hopeless, but it isn't, in fact, I may get into trouble by saying it, but your scab and your blight are the salvation of the fruit. If anybody could raise it like wild mustard you couldn't sell the fruit. The man who takes care of it is the man who is going to have success. We have found out, as I say, about the root cleaning, that if the roots are cleaned and the tops that we have little trouble. The question came up how to do this. We made some experiments. We found that by placing dry sulphur around the roots of the trees, preferably at the crown, or a distance of seven or eight inches below the surface, that it retarded the travelling of the insects up and down the trees. The insect doesn't want to go through that sulphur. The same way if there is blight in the top and he starts down. I have used everything which had a label, blight cure. There is no such thing. We have found that if we keep the insects out of our trees that our blight amounts to nothing. We found by the use of sulphur that we are keeping the insects from climbing up and down the trees. Some spray applied to the trees at a proper time may keep insects away and reduce it. There has been considerable excitement started among growers, especially in Jackson County, on the reports from California of oil sprays to prevent blight. We sent to California to investigate. We found some conditions that looked very good. We are going to try it but only experimental. If you keep all the insects away from your blossoms you may have no fruit.

In all this work the inspectors have been useful in educating the people, to induce them to get together and clean these roots up and then co-operate with our entomologist. We have had no trouble with the majority of the growers. We are down now to the point where they are not kicking for it. It is our salvation, absolute inspection. If your neighbor is not clean, you can't keep clean. We have used our influence to eradicate besides pests, the undesirable fruit varieties. We want to let you have the Spitzenberg, we don't want them. We are perfectly willing to let Wenatchee and Yakima raise Jonathans and other red apples. We think if each district will specialize on what they can raise, they are going to be benefited and we are using our inspectors to help us. I made a statement at Wenatchee during the Spokane show that I am sorry I couldn't retract afterwards. I understand that they have lowered their grades, color requirements on Jonathans to 15 per cent and 25 per cent for Spitzenbergs, but good heavens, if that is fancy I think I will encourage the growing of red apples in Rogue River. We would call them green apples. And yet I think part of the work of the inspection force is to eliminate these conditions as well as to serve the growers merely as policemen.

Do not expect your inspector to clean your district unless you co-operate. We can come in here and arrest the whole bunch of you and when we get through we haven't got anything. You should have interest enough in the business of your own county to get in and co-operate with your inspectors, you have no idea what they are up against. Get your friends, when election time comes around, to see that you have got representation at the county court. In saying this, I don't know who your county court is, but I know some county courts that are not just what they should be, and let them realize this, that you are paying out of these trees the cost of inspection because you are being assessed higher than the man next to you who is paying less expense to run his farm than you are to run your orchard and yet you are assessed for these trees, but co-operation as I say is the basis of all of this and unless you have co-operation among all, and unless you yourself will get in and help clean up I tell you that the time will come to Hood River and all these apple districts that fire blight will teach you a lesson. I want you to get it out, get it out now and then you will find you are ahead of the game. I thank you.

Chairman: We have with us the head of the State Board of Horticulture, Mr. Park. Would you give a little talk in addition to what has been said by Mr. Allen?

Mr. Park: I think not. The president of the Horticultural Board is merely a man who presides at meetings. I am commissioner of the second district. I think there is nothing I can offer.

Chairman: If not, we have one or two of the other commissioners here. Our commissioner, Dr. Macrum, will you come forward and offer something on this line?

Mr. Macrum: I don't know as there is very much more to offer.

Mr. Bateham: Besides being commissioner of this district, Dr. Macrum is one of the state commission on the consideration of marketing and grading. We would like to have him say something along that line as the subject has already been touched upon.

Mr. Macrum: Mr. Allen hit the key-note when he said co-operation is all there is in fighting fire blight. You can't fight fire blight in any district until you have co-operation because diseases of that kind are epidemic, community matters and individual matters, that is to say that every man who has an orchard in that district must use every energy he has and stand with the inspectors and help them out. You have got to work yourself. You can do this work with the right kind of spirit, that is what helps. If you really want to help him, you can get rid of your troubles. In the Columbia River district the fire blight is very slight. Are you interested in what Mr. Allen said about the use of sulphur? You may know that wooly aphis is one of the worst insects we have to deal with in fighting fire blight. Have you ever tried river sand? I think the Germans are the ones who originated this idea, putting clean river sand around the tree, covering it up with surface dirt again prevents aphis traveling up and down the tree. In regard to the question of grading apples, Mr. Bateham wanted me to say something about that. You know that the state of Washington, under its law, calls a convention every year of representatives from each district to go over the grading rules. We happened to be in Spokane at the time this meeting was held. They voted to retain the present extra fancy grade, but to lower the fancy grade, for instance, the Spitzenberg was reduced in the color requirements to 25 per cent, and I think that they put the Jonathans into the striped apple class. The evening that was done we met some of the greatest men in the apple business in the state of Washington, in the hotel, and the first thing they said was, "You Oregon men must help us. If these rules are carried out we are simply gone, that is all. If nothing is done, the apple business will be out of the state of Washington." That is the situation on grading. I want to impress on you the necessity of staying by your present grades at least, because the minute that you take a second grade apple and put a third grade apple in the box you are going to sell it for a third grade box. If you put third grade apples in you are going to get a third grade price. You know that if a man is building a first class buggy he doesn't put cheap paint on it or he would have to sell it for a cheap buggy. If you don't put up your grade and stick to it you may as well go out and raise pigs or clover or something else.

Mr. Bateham: Is there any possibility of maintaining something of uniformity throughout the Northwest?

Mr. Macrum: That subject was discussed considerably and some men were inflated enough to say that it was impossible to put uniform rules through to fit every district, owing to the climatic conditions, etc., in the different sections. There is another way of looking at that. It can be put through in a general way. You can state that the extra fancy should be perfect fruit, because that is what it is. The second grade should not be so large, that it may have a rust spot of such a size. In a general way you can establish rules. There should be no disease, no worm holes. Those things will apply to every district. For instance some people say we shouldn't have a C grade, maybe not, maybe the cannery can give more money than we can get on the market and that is optional. It should be left to the different communities to work out according to the conditions in which they have to work. As far as standardizing was concerned there wasn't anything definite reached on that. We weren't there at the completion of the business, but my impression is that they didn't do anything with it. But they did do one thing that they are sorry for, because the only thing you can ship beyond the mountains and make anything of it is the first and second grade.

Chairman: We want to appoint an auditing committee for the next year. The auditing committee for the past year was composed of Albert Brownell, C. A. Burt, and F. W. Power. I have been requested to appoint a committee and I know of no better man than Mr. Brownell, Mr. Burt, and I will add in place of Mr. Power, J. B. Pilkington. We are going to try and meet at 1 o'clock this afternoon and it is not quite 12 now.

Mr. Macrum: There is one little thing I want to emphasize, that is this: That when we came down from the meeting at the hotel the men high up in the fruit business were there yet and they appealed to us Oregon men and said, "Oregon has got to help us. We are looking to them to do it." Let us help them, but the easiest way for us to help them is to say we want the grade maintained.

Mr. Bateham: Following Mr. Macrum's talk I wish to offer the following resolution:

"Resolved, That this society favors the maintenance of present prevailing high standards of apple grades."

Mr. G. R. Castner: I have had some experience with fire blight. I was county fruit inspector of Washington County and when Hood River County was formed I was inspector here. We had an epidemic of fire blight in 1910 and it was eradicated by myself and a corps of helpers who went through and did the work regardless of the growers, in fact the growers welcomed us to come and do it and the third year it was eliminated from Hood River County. I have since been called to British Columbia to take up the work in a town called Penticton. I found the section I went into was badly infected with fire blight. I have been there three years and I did a great deal of the work myself, but we have had the co-operation of all the growers wherever they had blight. I have assisted them and we have the district comparatively cleaned out. I have had a good deal of experience with the root infection and I fail to know what insect it is that carries the blight to the roots of the tree, but I do know that a great deal of the root infection is caused by insects, especially the Ben Davis, carrying the bacteria to the water sprouts that come around the bottom of the tree. I don't know what insect could carry the bacteria down into the ground with the power to penetrate the thick bark of the root, although it is possible that it might do so. I have listened to the discussion here on advertising. British Columbia has been going through this process. They have the benefit of their government to help them out in most of their troubles. Last year the Department of Agriculture gave the association which is the same as your Horticultural Society, about $5000 for their use. They get out a small pamphlet showing the different varieties of apples, the varieties that are best adapted to cooking and baking and that is distributed largely through the cities like Vancouver and Victoria, where large amounts of apples are used and it has proven a great success and the Canadians are loyal to their own industries and they advocate the Canadians using nothing but British Columbia fruit so far as it is possible for them to do so and they are adhering to that and it has increased the consumption materially in the last few years.

Mr. Childs: I would like to say a few words about the insects the gentlemen spoke of. We have no difficulty in finding out what those insects are that carry the bacteria down to the roots. There are a large number of them. I am going to mention four. The first and most important is the ant, second the club beetle, also the woolly aphis, and one that we have discovered doing a great deal of damage this year is the minute grain thrip. He is not necessarily in the root, we have found him in the crotch of the tree where the bark cracks. We have collected at the base of one tree over 200 insects, principally beetles and ants, working in the roots.

Mr. Minton: I want to make a motion that when we adjourn, we adjourned to meet Saturday, December 16th, in the office of the State Board of Horticulture in the Chamber of Commerce Building, Portland, for the approval of the actions of this meeting. The reason for this meeting is that this body is an incorporated body with a head office in Portland and the election of officers and its annual meeting must be held in Portland according to our articles of incorporation. We do not adjourn here, we adjourn to meet for the approval of the action of the body during this session.

The motion was seconded by Mr. Macrum, and carried.

The meeting adjourned until 1:00 p. m.

Wednesday Afternoon, December 13, 1916

The meeting came to order.

Chairman: We will take up first the report of the committee on resolutions.

Mr. Pomeroy read the report.

RESOLUTIONS.

Your committee on resolutions respectfully report as follows and ask that the resolutions presented be adopted by this Society:

Resolved, That the Oregon State Horticultural Society hereby expresses its thorough appreciation of the courtesies shown it at this meeting by the Hood River Commercial Club, the citizens of the city of Hood River, and the Hood River Valley, and by the press of Hood River and of Oregon.

The Society hereby thanks the Oregon Agricultural College for the notable assistance it has given this Society in the valuable addresses and papers given at this meeting by members of the Oregon Agricultural College faculty. The Society also thanks all who have aided in making the meeting a success by the preparation of papers, delivery of addresses, or otherwise.

The secretary of this Society is instructed to convey to Mr. A. A. Quarnberg, of Vancouver, Washington, an expression of the great pleasure he has given the members of this Society by the preparation and presentation to it of a gavel made from the wood of the first apple tree planted on the Pacific Coast, to-wit, the tree planted nearly a century ago at Vancouver, Washington, then and for many years thereafter a part of the old Oregon Country.

The report was adopted.

Chairman: It is in order for us to instruct the secretary to have the minutes of this meeting printed. A motion would be in order authorizing the printing of the report and minutes of this meeting.

Mr. McDonald: I move that the secretary be instructed to have the minutes printed.

Mr. Macrum: I second the motion.

Motion carried.

Chairman: We would be interested in hearing of the work of F. C. Reimer from the Southern Oregon Experimental Station, but he is not present and has no paper here. Mr. Allen, who is also from Southern Oregon, is present and has been requested to say something on that line and will give us briefly something regarding the work of Mr. Reimer.

Mr. Allen: Mr. Chairman, gentlemen, I don't like to even attempt to make any explanation of Mr. Reimer's work but a number in the audience here have asked what this was. I have been closely associated with him and will volunteer to give you an outline of what he is doing.

To start with we feel that the fight with pear blight and the remedy is something on par with the big gun manufactories and the armor plate manufactories, for instance the inspectors are trying to make big guns that will kill the germs and Prof. Reimer's work belongs to the armory plate class for trying to make something which the germs cannot penetrate. He has been experimenting on a large number of pear stocks. Any time that he can hear of something that shows any sign of being resistant to the pear blight disease he has obtained cuttings, or young trees to plant in the experimental station and raising stock from these he is eliminating those varieties which show any tendency to blight. I am going to leave all names for Prof. Reimer. At the present time he has made some very hopeful discoveries. He has at least one variety which up to this date has not been affected with blight. He has others that are very promising and I am very sorry that he is not here to explain it to you. I believe he has written some articles on it. I believe these can be obtained from the Agricultural College and there you get a thorough description. My idea was merely to tell you what he was doing. This is being done in the Experimental Station under the direction of the Oregon Agricultural College. I hope that every grower and every citizen will recognize the immense aid the college is giving the whole state, in fact the whole country, in this kind of work. We know that Oregon has jumped ahead. We voted ourselves in a bad condition but like any other business we want to be careful that we don't handicap ourselves by cutting down our stock in trade you might say, and I hope that all the citizens will back up the college in their future work. These experimental stations are doing an enormous beneficial work. If we don't encourage it and keep it up we are going to lose it. I bespeak the co-operation of this assembly to get behind and keep this institution going. I thank you.

Chairman: We are to have two papers this afternoon and perhaps other work beside that. I will say in connection with Mr. Allen's talk and a paper which we are to hear this afternoon on bud formation that we appreciate what the Oregon Agricultural College is doing for us. We appreciate the work of the young men who have come from that college in this valley. I want to say to anybody connected with that agricultural college that we firmly appreciate their work. We appreciate the work that has been done in the past and we appreciate what the college is doing for this state in many ways. It is a very important institution to this state. We will now hear from Mr. Magness.

Mr. Magness read a paper on "Studies in Fruit Bud Formation."

STUDIES IN FRUIT BUD FORMATION.

By J. R. Magness, Assistant in Research Laboratory Oregon Agricultural College.

What often amounts to one of the most difficult problems that confronts the orchardist is that of securing a good amount of bloom in the orchard. In many cases it seems almost impossible to secure blossoms in trees that have reached the age at which they should begin bearing. Trees eight or ten years of age, that have never borne even a partial crop are only too familiar to many fruit growers.

Not only do we have difficulty with a failure to produce fruit buds, but often times in our old orchards, we are troubles with their overproduction. Trees low in vigor will often produce so many fruit buds that the tree is simply a mass of bloom in the spring, but lacks the ability to set and mature a crop of first class fruit. Especially is this true of old pear and prune trees.

A third condition which the orchardist has to combat, and which is closely linked with fruit bud formation, is that of alternate bearing in many varieties of apples and pears. Many fruit buds are formed one year, with such a heavy crop of fruit following that apparently the whole energies of the tree are expended in maturing the fruit, and no fruit buds are formed for the following year. Consequently, a heavy crop is followed by no crop at all, and the orchard, instead of producing a fair crop year after year, produces very heavily, but only once in two years.

For a number of years, investigations have been carried on at the Oregon Experiment Station to determine where fruit buds are formed on different kinds of fruit trees and for different varieties; the time of the first appearance of flower parts in the buds in different positions; and the conditions in the tree that are associated with, and which apparently control fruit bud formation. It is proposed to present in this paper some of the things that have been learned in regard to fruit buds, in order that the troubles in connection with fruit bud formation may be more readily dealt with.

The first subject to consider is that of the positions of fruit buds in the different kinds of fruit trees. Apples and pears may be considered together, since their methods of fruiting are almost identical. By far the greatest number of fruit buds in mature trees of all varieties are borne on spurs. The terminal bud on the spur produces the flower parts, an entire cluster of flowers being formed in a single fruit bud. During the following season, if fruit is produced from the fruit bud, one or more leaf buds will develop at the sides of the spur at the base of the flower cluster. These leaf buds continue the growth of the spur, and will usually form fruit buds during the season following the one in which they are formed. Thus a spur normally produces fruit buds every other year. This varies greatly, however, for fruit buds may be formed every year, or a spur may go a number of years and never form them. Whether or not they are formed depends very largely upon the nourishment they receive.

Buds in another position which often form flower parts in many varieties, especially while the trees are young, are those formed in the axils of the leaves along the current season's growth. Such buds are of great importance in certain varieties. Much of the first crops of such varieties of pear as Bartlett and Winter Nelis, and of such apples as Jonathan and Wagener, is produced from them. Other varieties show very few such buds. It is also of interest to note that when flower parts are formed in buds in this position, they are almost invariably out toward the terminal portion of the shoot. This is very important from the standpoint of winter pruning, for a severe heading back in these trees will often times almost entirely remove the bloom crop for the following year.

The last position to consider in which fruit buds are borne on apples and pears is at the terminals of shoots too long to be classed as spurs. This occurs to a greater or less degree in practically all varieties, and is of much importance in some, especially while the trees are young. In Yellow Newtowns, for example, much of the fruit is produced at the ends of shoots ten inches to fifteen inches in length. If these short shoots are systematically cut from young trees of certain varieties, it may delay the time of bearing very materially.

In the case of cherries, the fruit is borne mainly on spurs. Each spur is terminated by a leaf bud, about which a number of fruit buds are grouped. The leaf bud continues the growth of the spur year after year, so the cherry spur is straight, and unbranched. Normally, fruit buds will be formed on the spur every year. A small amount of fruit in most varieties is also produced from buds on the one year wood. When such buds are formed, they are usually toward the base of the shoot, rather than near the terminal, as in apples and pears. Consequently, they will usually not be removed by a winter heading back.

In prunes and plums, considerable variation occurs as to the proportion of the buds borne in different positions. In prunes and other European varieties of plums, most of the fruit buds are borne on spurs. The spurs are terminated by a leaf bud, which makes a certain amount of growth each year. The fruit buds are produced in the axils of the leaves along the new growth made by the spur. So what the spur really amounts to is a short shoot, with fruit buds in the axils of the leaves. In most varieties, a few fruit buds are produced as auxillaries along the sides of the shoots. In certain of the Japanese plums, these assume much importance, producing a large proportion of the total blossom crop. In these varieties, they are distributed along the branch in a way similar to peach buds.

In peaches, the entire fruit bud crop is produced on the one year wood. The buds are borne in the axils of the leaves, normally in groups of three. In that case, the middle one is a leaf bud, while the two outside buds form flower parts. If the shoots are making a very vigorous growth, and especially if the tree is rather dense and shaded, the fruit buds are mostly out toward the terminals of the growth. On the other hand, if the shoots are making only a medium amount of growth, and the tree is well opened up to the light, the fruit buds will be well distributed along the entire length.

After this brief summary of where fruit buds are formed, it is well to consider briefly just what the exact differences in buds in various positions are, if any such differences exist. Is there any fundamental difference between a spur and a shoot, and between buds produced in the two positions? Careful microscopic study has failed to reveal any such difference. Leaf buds on spurs and leaf buds on shoots are apparently exactly the same, except in degree of development. The only difference between spurs and shoots seems to be in amount of growth made. The amount of growth depends upon nutrition, rather than upon any inherent difference, either in the shoot or in the buds. In those cases in which fruit buds are formed on both spurs and long shoots, there is apparently no difference in manner of formation and development of flower parts.

The question then arises—why do some of these buds form flower parts while others do not? If there is no fundamental difference between buds in different parts of the tree, why do apples and pears tend to bear mainly on spurs, rather than upon the one year wood? This brings up the question of the fundamental conditions in the tree which are associated with fruit bud formation. Before discussing this, it is well to establish the exact season during which fruit bud formation takes place.

The season under Oregon conditions, during which the earliest evidence of flower parts in buds may be detected, has been established more definitely for apples than for any other kind of fruit. Buds on spurs of apples have been found to show the initial formation of flower parts during a period extending from the last of June until the middle of August. A few have been found to be forming even as late as September 1. Considerable variation occurs between varieties as to the exact season of this fruit bud initiation, but for all varieties, it extends over quite a long period of time. So far as the buds on the one year wood are concerned, they are formed at a somewhat later date. Their season occurs from the middle of August until the end of September.

Thus it is seen that in apples, there is a period of two to three months during which fruit buds form.

Other kinds of fruit have almost the same season. Pears, prunes, peaches, and cherries all have a season of fruit bud formation extending from late June or early July until September. Most of the buds are formed between July 10 and September 1.

In considering the conditions in the tree associated with fruit bud formation, it is necessary to have clearly in mind how the tree is nourished, and the functions of the different parts of the tree. The roots absorb water, with dissolved minerals from the soil, transport them to the trunk, and serve as a storage place for the products of the leaves. They also, of course, serve to anchor the tree. The trunk branches and twigs support the leaf area, serve to carry the water and mineral foods from the roots to the leaves and the foods from the leaves to all parts of the tree, and act as a storage place for elaborated food from the leaves. In the leaves, air is taken into the plant, together with the carbon dioxide contained in it. Water and mineral foods from the soil are supplied by the roots. The substances are all brought together, and in the presence of light from the sun, are combined by certain of the leaf organs into sugars, starches, etc. These so called elaborated foods formed in the leaves, are the only ones which are directly available to the plant for tissue building.

The kind of growth made by the tree at any particular time, varies very largely with the relative amount of the different kinds of food it has available for use at that time. For example, if there is a large amount of the unelaborated food from the roots being supplied, and a relatively small amount of elaborated food from the leaves, vegetative growth in shoot length is stimulated. When a relative abundance of elaborated food is present, fruit bud formation and increase in thickness of shoots occurs. Fruit bud formation is apparently associated with a relative abundance of elaborated food in the immediate region of the bud. This conclusion is supported by the following facts:

1. The time of initial fruit bud formation, and the position in which it occurs, shows a correlation to the amount of elaborated food present. It has been mentioned before that fruit buds do not begin to form before late June and July, and they may not form until much later than this. The leaf area of the tree, and hence the food manufacturing area, is at its maximum expansion by this time, while usually the intake through the roots is less than earlier in the season, due to drier conditions. Thus the elaborated food is coming into relatively greater abundance. Also it was mentioned that in spurs, on the average, this initial flower part formation occurs earlier in the season than on the one year old wood. On each spur, we have a number of leaves intimately associated with a single bud, while on the year wood, there is but a single leaf subtending each bud. Consequently, it is to be expected that the elaborated food supply would become abundant at an earlier date in the region of the larger leaf area. Hence, the fact that these buds are formed at an earlier date indicates that their formation is associated with the elaborated food supply.

In our deciduous tree fruits, regardless of whether the fruit buds are formed on one year wood or on spurs, they are usually found in that region of the tree in which the largest leaf area has the best exposure to the light. This is the region in which the greatest elaborated food manufacture is going on, and is another indication of the association of elaborated food manufacture and fruit bud formation.

2. The influence of removing a ring of bark, or partially girdling the tree, upon the formation of fruit buds in the tree is another indica-

tion of conditions in the tree essential to fruit bud formation. When we cut through the bark, it becomes impossible for any elaborated food from the leaves to pass down into the roots, since the elaborated food is transported through bark. Consequently, such a treatment will usually soon lead to the accumulation of elaborated food in the top of the tree. In such trees, a large number of fruit buds are almost invariably formed. We have often seen trees almost girdled by winter injury, which during the following summer formed flower parts in almost every bud on the tree.

3. Finally chemical analysis has shown that fruit buds are formed on those spurs and branches which show the highest percentage of starch stored during the winter. While this work has been carried on only on a very limited scale, results that have been obtained in those instances in which it has been done entirely bear out the theory that fruit buds are formed when the elaborated food supply is abundant.

From a consideration of all these facts, we reach but one conclusion —namely, that whatever the real cause of fruit bud formation may be, it is very closely associated with the elaborated food supply. We must emphasize again, however, that it is a relative abundance of elaborated food as compared to the raw food from the roots, rather than the absolute amount, that is correlated with fruit bud formation.

The question that naturally arises then in connection with such a discussion is this: What is the practical application of this study of fruit buds? How, if at all, is orchard practice to be regulated by this knowledge of conditions in the tree associated with fruit bud formation?

1. How are we to induce fruit bud formation in very vigorously growing trees that have reached bearing age, but do not produce blossoms? We must work for a relative abundance of elaborated food in the tree. The methods of regulating elaborated food supply may be grouped under two heads. (1) Regulating leaf area, and its exposure to the light. (2) Regulating the intake of raw material from the soil. Leaf area will be regulated by the pruning which the tree receives.

This pruning should be such as to stimulate as far as is consistent with tree form, the formation of that portion of the tree which produces the greatest leaf area relative to the amount of wood growth. With most kinds of fruit, this is the spurs. Any type of pruning which tends to reduce the number of spurs, tends to reduce the relative leaf area, and reduces the tendency to form fruit buds on spurs. Winter pruning reduces the potential leaf area by removing buds that would otherwise have formed leaves, hence tends to delay bearing. No pruning at all will usually result in the largest leaf area, and consequently, an entirely unpruned tree will usually come into bearing first. Needless to say, however, we cannot afford to allow our trees to become badly out of shape to get a small amount of fruit somewhat earlier. Our pruning, should be such as to allow the largest number of leaves possible, per unit of wood present, with the best possible light exposure, and still keep the tree in shape.

Pruning is not the only consideration in bringing about the formation of fruit buds. One of the easiest ways to increase the relative amount of elaborated food is to lessen the intake through the roots. If irrigation is practiced, allow the ground to dry out somewhat during late summer. If clean cultivation has been given, diminish it for a year or two. If the soil is very rich, and the trees vigorous, it may be advisable to plant a grain crop for one or two years. Anything that will cut down the moisture supply for the trees will tend toward fruit bud formation. This kind of treatment, with pruning that will leave a good leaf area, should be successful in inducing fruit bud formation in trees that do not bloom.

2. But how about the treatment for those trees which tend to produce a great crop of bloom, but lack vigor to mature a good crop of fruit? Usually in such trees we find a large number of spurs, with a considerable leaf area, while the soil is somewhat depleted. The leaves receive enough raw food from the roots to manufacture some elaborated food, and fruit buds are formed, but the large number of buds with the small raw food intake, renders the elaborated food supply too small to mature fruit. Again, the treatment must be two fold. The number of buds must be reduced, and the root intake must be stimulated. Rather than removing all the buds from certain parts of the tree, it is essential that we remove some of the buds from all over the tree. In other words, instead of removing a few big limbs, we must remove a large number of small twigs and spurs from all parts of the tree. The stimulus of the pruning comes in that part of the tree in which the pruning is given, and if the buds that are left are to receive more food from the roots, other buds adjacent to them must be removed.

In connection with the reduction in the number of buds in all parts of the tree, the soil must be so managed that root intake will be stimulated. If any element of fertility is lacking, it should be supplied in the form of fertilizer. Barnyard manure is always good for trees in this condition. Especially are cover crops valuable to improve the condition and fertility of the soil. If the orchard has been in sod, cultivation will be advisable. Soil treatment for such trees is fully as essential as the pruning given.

3. Finally, how does this knowledge of fruit bud formation help us to deal with the alternate bearing habit of many varieties of apples and pears? It is essential that we maintain conditions in the tree such that fruit buds will be formed every year, if the tree is to bear every year. If the tree is allowed to produce a very heavy crop one year, it is extremely likely that so much elaborated food will be used up in developing the fruit that very few, if any, fruit buds will be formed. Hence, it is essential that we do thin the fruit that an excessive crop is never produced. It is also essential that in thinning, all the fruit be removed from many of the spurs, for a spur will usually not produce fruit buds during the same year it matures a fruit. Finally, the thinning should be done as early as possible. Fruit bud formation begins by July 1, and thinning should be completed as soon after this as possible. This method of thinning, with regular pruning and cultural treatments, should go far toward preventing trees from assuming the alternate bearing habit. When the habit is once firmly established, it is very hard to break.

In conclusion, then, we may say that in all our orchard operations, we should bear in mind how they will effect the conditions of nutrition in the tree, and how these conditions will effect fruit bud formation. Each orchard, and in fact, each tree presents a different problem. We must bear in mind the conditions we are seeking to bring about in the trees, and regulate our pruning and cultural practices accordingly.

Mr. Paulus: What effect would the cylindro sporium disease that we have had on the Willamette Valley prunes have on next year's crop?

Prof. Magness: Removing leaves the first of July will prevent the formation of fruit buds for the next year. Now if the cylindro sporium is severe enough to practically take all leaves off the tree along the first of July I think it will certainly lessen the number of fruit buds.

Mr. Paulus: Most of the prunes were affected along about September the worst, so you don't think they would be very much damaged for next year?

Prof. Magness: I think you would have your fruit buds formed for next year. After the fruit bud is once formed, then it will remain a fruit bud and will come along.

Prof. Childs: In the use of oil sprays and lime sulphur about the semi-dormant time, the foliage is frequently burned and instead of going on and producing leaves and bloom, leaves are produced on the fruit spur. I was wondering if those leaves would go ahead and form a fruit spur or whether those leaves would form a fruit bud the following year.

Prof. Magness: That would depend very largely whether your leaves become fully expanded by July.

Chairman: I would like to ask one question. It was brought to my mind by the paper of Prof. Gardner. That is in the peach tree the fruit buds, those that are going to develop into fruit for next year, are formed pretty well up the limb. Will that apply in peach trees as well as any other trees? Would it be best to prune that peach tree during the summer in order to develop those buds?

Prof. Magness: We have found in this connection with peach, a summer thinning out will often cause the buds to develop toward the base of those shoots. Light is very essential.

Chairman: Often times in order to get good fruit on a peach tree you must prune that tree severely. You cannot go ahead and prune a little and haggle around over it, but you must give it a pretty thorough pruning. Now sometimes when we give that tree a severe pruning it will develop small twigs and won't develop many buds.

Prof. Magness: I think that is very largely because of the fact that you have a large number of shoots growing near the bottom of the limb and it will be probable that your shoots will be close together and are going to shade this lower portion so that all the shoots you do get will be out towards the end. Thin out during the summer.

Chairman: What time during the summer?

Prof. Magness: About the first of July. It shouldn't be delayed very much later than that because the fruit buds are going to form during August.

Chairman: I think that is worth knowing. We ought to know how to take care of them.

Prof. Magness: In sections where the work we have done is on defoliation, we found that if we have two shoots and remove a portion of the leaves from this shoot, fruit buds seem to be very largely on the leaves that are on this shoot and if we strip all the leaves off of this shoot fruit buds will not be formed.

Mr. B. Leis: I have about sixty or eighty Baldwins about eighteen years old and in the same orchard there are three or four other varieties of apples about eighteen years old and they have never produced any fruit, never formed bloom buds and the other trees bear a good crop every year. What is the reason for this?

Prof. Magness: Are your other bearing trees of the same variety?

Mr. Leis: No, just the Baldwins fail. The other varieties do bear but the Baldwins don't.

Prof. Magness: What type of pruning?

Leis: I prune them the same as the others.

Prof. Magness: You take a Jonathan tree and you can't keep it from bearing. What kinds of apples have you?

Mr. Leis: I have Northern Spys and Gravensteins and I can't get them into bearing. Like our secretary told us, some of us will be crazy with our apple troubles.

Prof. Magness: Without knowing more I am sure I couldn't tell you what is wrong.

Chairman: Before we hear Mr. Harris I want to allude to this gavel that was spoken of in the resolutions. This gavel was presented to us yesterday by Mr. Williamson, secretary of the Board of Horticulture, at the request of A. A. Quarnberg, the man who made it, from the old tree at Vancouver. The seeds were planted by Dr. McLaughlin and the tree is still producing fruit. Now this gavel is simply made from the wood of that old tree planted nearly a century ago, and the knots were not turned off. Both the mallet and the handle are from the limb, simply taking off the bark and polishing down the wood. I think this is a very appropriate gavel for this Society. I believe that there should be a little engraved plate set on this describing from what it was made and who presented it. When my parents landed at Vancouver 75 years ago as I told you yesterday, the tree from which this limb was taken was bearing fruit. It is bearing fruit now. Therefore it is a pleasure to me to hold it in my hand and that I was permitted to be the first to use this gavel. It will be turned over to the secretary and used by future officers. Let some one make a motion that we put some inscription on this gavel that will indicate what it is, and where and who it came from.

Mr. Batcheler: I move that the secretary be instructed to have the plate made and the facts put on it. I think a silver plate.

The motion was seconded and carried.

Mr. Harris addressed the Association on "Publicity, Good and Bad."

PUBLICITY—GOOD AND BAD.

By A. H. Harris, Industrial Writer on the Evening Telegram, Portland, Oregon.

In entering upon a brief discussion of publicity as it affects the apple grower in particular and the fruit-growing industry in general, it is my purpose to call your attention to a few striking examples of bad publicity and good publicity. I do this because I feel that growers as a rule fail to appreciate the value of the printed word of commendation and the damage which follows the printing in newspapers, particularly, of false statements and of matter tending to discredit the industry as a whole or any part of it.

A striking case of bad publicity is found in the advertising of the recent "National Apple Show" held at Spokane. In the advertising of the show, and in the newspaper accounts of the events of the week, there is clearly set out a lack of appreciation of the apple, and emphasis is laid on matters foreign to the orchard, the market, and the grower. Here is a copy of the body of the paid advertisement of the show as supplied by the Oregon-Washington Railroad Company and printed in all the Portland dailies. Notice the character of the attractions offered:

Advertising Like a Street Carnival.

"An apple pie free to every one attending the show; 200 prizes every afternoon for women; voting competition between aid societies and women's club for $200 in gold; free moving pictures; baby pageants every afternoon; Princess Apple Blossom, her court of Princesses of Apple Land, and King Pip in a series of night spectacles; carnival parades, uproarious fun and frolic on down town streets. Don't forget that apple pie!"

Scan as closely as you may this advertisement, not a word appears about the dignity of the apple game, not a fact about the horticultural value of the show, not a suggestion of help and advertising for one of the basic industries of the Northwest.

On the other hand, the advertisement sounds like the cry of the street carnival faker for the nickles of the hungry-for-amusement country folk, the plea of the sideshow for the dimes and dollars which have come to producers at the end of a hard year's work.

Newspaper Plays Up Amusement Feature.

But the display advertising of the railroads is not enough evidence of the character—or lack of character—of the "National" apple show. In Spokane is published one of the wide-awake daily newspapers of the West, the Spokesman-Review. Read what this great paper says about the carnival features, about the parades, about the moving picture shows, about the doings of the king and the princesses, and about the frolic on downtown streets. Front page story after front page story is given to the carnival features, to the story of men and women gathered to spend money, but blessed few words are given to telling of the magnitude of the "National" apple show as a show of apples grown in the nation, and as a comprehensive exposition of the idea of horticulture. The story is told of the exhibition of the moving pictures of "Tillie's Punctured Romance," about the throngs of merry-makers on the streets and about the thousands who passed in the gate and paid the usual admission fee. If such publicity and such amusement mean a National apple show then it is not necessary for the welfare of the apple industry that "National" shows be held.

I have compiled all the stories about the apple show published in ten issues of the Spokesman-Review, and offer them for inspection. If there is anything more than the street carnival spirit shown in any of them, save one or two dealing with the awarding of prizes, and a brief interview on co-operative selling of raisins in California, I have been unable to find it. The whole story is that of a street carnival, and to cap the climax, an editorial printed on Sunday following the show demands that immediate preparation be made for another "show" next year, with all the entertainment features, with all the carnival ideas emphasized. And, in the face of these facts, Spokane boosters have the effrontery to call their street carnival, with admission fee attached, the "National Apple Show." I protest against such unfair exploitation of the apple and legitimate horticulture. I protest against the methods which would make a joke of a display of the products of farm or orchard. I protest against the commercialization of displays of fruits, and against treatment of men and women who live on the land which would lead anyone to assume that such stuff as "Tillie's Punctured Romance" is the class of moving picture to which they are attracted and, which alone, is offered free. It seems to me to be timely and in order for this Society to pass a resolution protesting against the effort of the street carnival experts to capitalize the word "National" in the apple show game, and to demand that if the word—comprehending a great exposition representative of the national resources—be used, the show be made a legitimate apple exposition. In this capacity a show could be maintained which would do much good to Northwestern horticulture and to the city which developed it strongly.

Damaging Crop Reports Widely Circulated.

Coming now to the matter of newspaper stories of crops and harvest difficulties I find more bad publicity. I have clipped from Portland dailies a number of stories telling of "probable" damage by frost, of car shortage, of lack of storage facilities in Hood River. As late as October 30 stories tell of 200,000 boxes of Hood River apples still on the trees with threatening weather and even frost damage imminent. Two days earlier stories of car shortage and jammed warehouses were printed. Now, I am a believer in telling the truth in newspaper stories, but I am convinced that it is bad publicity to tell the buyers of the country of "probable" heavy damage by frost, of uncontrollable car shortage. The buyer has hook enough without the grower giving him first hand such "probable" information. I never learned that a "probable" statement meant a fact, hence if I were a grower in this valley I would use my best endeavors to see to it that such statements never reached the public press. After damage is done is soon enough to give buyers a cudgel to bear the market with.

A lot of harmful publicity has followed the effort of certain fruit-growing districts to lower the grades of Northwestern box apples. Markets in the East are glutted with poor grade fruit, and prices are expected to decline. Barrel apples have never been packed as daintily as Northwestern box apples and the grades have never been as high. Admission that grades are too high is an admisison that barrel apples and box apples are on a level competitive basis, or nearly so, and such a position would be harmful to every grower of good apples in the Northwest. Western apples must be graded for select markets if prices are to be maintained and if the best trade is to be sought. Any effort to reduce grades and to place good box apples on a basis with barrel apples as to color and size will give opportunity for a lot of harmful publicity. Oregon should stand firmly against any such admission of over-grading, and she should hold markets where quality counts.

Apples Not in High Cost Group.

Apple growers are missing an excellent opportunity to gain standing for their product during the present scare over the high cost of living. Apple growers have not told the people of the country that among the many articles of food which have soared in price, the apple is not found, and in my judgment this is bad publicity or lack of good publicity. There has been a wonderful opportunity during the past few months to show the people of the country the wisdom and the economy of using apples freely. This fact harks back to the need of a co-operative effort to stimulate the consumption of apples and all kinds of Oregon fruits—through publicity.

During the last year I have gathered a number of cook books published by societies of women in Oregon. A number of the best books were printed by organizations within churches. Here is one published by a prominent East Side church, in Portland. The book contains 249 recipes, many of them signed by the names of prominent women. Only fourteen recipes use Oregon fruits. In five recipes apples are used, in two grapes are used, in three peaches are used, in one each, pears, prunes, strawberries, blackberries are used. This book is a fair sample of the others, showing that among Oregon women but little effort is made to encourage the use of local fruits.

A New Product, Canned Baked Apples.

And, speaking about efforts to stimulate the consumption of Oregon fruits, here is a new product offered for your inspection. It is canned baked apples, packed by the Eugene Fruit Growers' Association, and so far as I know, the first product of the kind to be offered in this country. Here is a chance for a lot of good publicity, and at the same time the development of a strong factor in the creating wider markets and all-year-round markets is made possible. With canned baked apples ready to serve any day in the year there should be tremendous developments in distribution and a steadying of market prices. The problems of car shortage and of cold storage will be simplified when part of the apple crop shall be canned and handled largely as dried prunes are now distributed. Certainly this new product offers a splendid opportunity for constructive publicity and for better marketing conditions.

Apple growers are missing a wonderful opportunity open to them to gain publicity for the apple by not giving the women of the country enough apple literature to show them that as an economic factor in the family budget the apple should hold a leading place. In fact there is no apple literature, no place where a cook can go to ascertain just what can be done with the apple. One of the most common of fruits, yet the story of the apple has been told only by nurserymen who wanted to sell trees and by agricultural college experts who had a high purpose to aid horticulturists and farmers in producing perfect trees and splendid fruit. Nobody has told the 24,000,000 women who are cooking in this country, even, how to use the apple to the best advantage. And, here is a wonderful opportunity for the orchardists of Oregon to create a line of exclusive and helpful publicity.

The Present, Age of Newspaper and Publicity.

We are living in the age of publicity. By publicity I mean the spoken word of commendation or disparagement, the printed word, the news story which attracts the eye of the multitude. I have lived in no age but the present, but from all I can learn of the past, I doubt if ever there was a time when good publicity meant as much as it means today, and when harmful publicity was as damaging as it is today. The newspaper is dominant in the American home; the newspaper is the great molder of public opinion and of private ideas. And, the newspaper, under our system of dollar-chasing, more and more, must become the keeper of the public conscience, the director of massed activities, the salesman on the one hand and the knocker on the other.

The newspaper—the great newspaper—is as much a public utility as is the railroad, the telegraph, or the telephone. The great newspaper makes and breaks men over night; the great newspaper builds and tears down fortunes in a week. Not alone is the work done by the printed word. As frequently, perhaps, the result comes from silence. The people of the United States were taught to travel by the newspapers. Every national park was put on the map by the newspapers, however much profit has accrued or will accrue to the railroads in increased tourist traffic. The "pork barrel" as it has developed in the federal appropriations for river improvement, is the child of the great newspapers of the United States, newspapers which felt the need of boosting the game of their friends. The reign of the saloon was made possible by another kind of newspaper influence, silence, the lack of publicity. Race track gambling went by the board as soon as newspapers had courage enough to tell the story of degradation which followed the trail of the bookmaker.

Wise Tradesmen Know Value of Publicity.

American business men know the value of publicity in all the various stages of inflation and exploitation and speculation. Merchants who are successful know the value of advertising and spend money freely and wisely in reaching the eye and the ear of the consumer. The manufacturer of breakfast foods, the manufacturer of hooks and eyes, the manufacturer of cigarettes, each understands the value of good publicity, and each keeps an eye out for damaging publicity. Try effective knocking the cigarette and see how quickly newspaper space will be used by promoters of the smoker's taste to offset your efforts.

Did you notice that following the loss of the Titanic ocean travel was paralyzed for a time, and that as soon as the shock of the catastrophe had passed, nearly every steamship line operating on the Atlantic filled page after page of newspaper space with stories and advertisements intended to allay the fears of the better class of travelers? Have you noticed that following fatal train wrecks the newspaper stories are not so horrifying as they were ten or fifteen years ago, and that following the burial of the bodies of the dead the story of the wreck is closed, abruptly closed? Of course, this tendency to minimize disasters of the rail may be a tribute of tenderness to the memory of those persons whose lives were snuffed out; or it may be just good publicity from the angle of the railroad.

Deadly Power of the Knock.

Take another line of publicity—one nearer home. Able men have written articles about the automobile; the advertisements of well-known machines cost hundreds of thousands of dollars. Yet, in face of this fact, a simple bit of publicity will put a car to the bad in a community. Just let the newspapers, for a few months, mention the fact the Grouchcar is in nearly every accident that occurs, and whatever the facts may be and whatever the virtues of the car, people will get the hoodoo idea and the sales force will become idle. The psychology of good publicity is success; the psychology of bad publicity is failure.

Perhaps one of the best instances of the recognized value of the psychology of publicity is found in the story of the San Francisco "fire." Now, it makes no difference in the matter of actual losses, whether the cause of the great disaster was earthquake or fire, but it makes all the difference in the world whether the people outside of California get firmly fixed in their minds the cause of disaster as fire or earthquake. San Francisco could not afford to have the world recall a great earthquake, for the result would be permanent eclipse and utter impossibility to rebuild the greater city. On the other hand, the world could remember and recall a great fire as the breaking of the chains, as the factor making possible greater development, opening the way clearly to rapid industrial and commercial growth.

Constructive Ideas Prevail in the South.

Another striking example of the difference in types of publicity is found in the South. Follow the advertising of railroads and communities in the South and you will find strong backing for enterprise, for local achievement. A Southern railway will tell of the construction of silos along its line by farmers who have lived on the land for twenty or thirty years. A Southern railway tries to build up the people already living in territory tributary to transportation; the effort is not so stong to bring in new people until those already on the land can succeed.

Now look at the methods used in the Northwest, in Oregon in particular. Nobody tries to help the man on the land to succeed; the whole effort is to bring in new money in the hands of men who do not know values, that the man already on the land—or who lives in the city and owns the land—may sell out at a profit, at an unconscionable profit in the years gone by. The constructive idea of real community development along sane lines is lacking in much of the publicity work done. The idea of speculation, of exploitation, has been uppermost, leaders in boosting methods failing to realize that men who are robbed at the very beginning of their effort in Oregon have slim chance to succeed and become truly valuable citizens. The fruit grower is no exception to the rule. Speculation in land has put the skids under a larger number of would-be citizens and fruit growers than any other single factor in the industrial and commercial development of Oregon. And, speculation is based on publicity, on what I would call crooked publicity.

Oregon Publicity Not Well Balanced.

It is clear to me that in Oregon too much publicity has been given to crops, to production, in proportion to work done in marketing, in selling. It has been everybody's business to tell what could be done. It has been nobody's business to put the profits in the bank. Oregon is still in the cave-man age so far as marketing goes, so far as profitable marketing goes. The fruit grower is suffering from all the evils of a false scheme of land settlement in Oregon, and nobody knows better than he how difficult it is to make a showing of profit on the year's work. Yet, true development cannot come so long as men are making a helpless struggle against debt heaped upon them by crooks whose power to deceive came to them through publicity.

I have no purpose to paint a discouraging picture—far from it. On the other hand I purpose to paint a picture with high lights of helpfulness, of cheer, of optimism, for the weapon of the crook can be made the lever of the builder. Let us look at a new enterprise and get a vision of what can be done through co-operative effort along constructive lines.

Marvelous Success of Fruit Juice Industry.

Only yesterday the fruit juice business had not been thought of in Oregon. Tremendous profits were being made in the manufacture and sale of malt and spirituous liquor. And, the making of money is the most paralyzing and stupifying activity in which the American citizen can engage.

When loganberry growers faced heavy losses they awakened to opportunity right at their hands, and in a remarkably short space of time the loganberry juice business was launched. Two factors were essential, a peculiar fruit product and publicity. Another factor, men, had been waiting for just such an opportunity. The result is that within a brief space of time loganberry juice has been introduced from one end of the country to the other, and a new conception has been developed in the mind of every thinking man in Oregon, a conception that the old road is not necessarily the only road.

In the development of Oregon—and this applies as aptly to fruit growing as to merchandising—there has been lack of continuity, lack of purpose to stay on the job year after year. This being the case there is no need for wonder at the results gained from spasmodic publicity. If there is a factor in business which has a large cumulative value it is publicity. Yet, in the haphazard methods followed in Oregon during the last ten or fifteen years, it has been impossible to benefit by the cumulative value of publicity except in the case of a very few corporations or firms which have remained steadfast in their lines and in the purpose to dominate their fields.

Fruit Selling Game Calls for Vision.

Not only in business has the cumulative value been lost. In the fruit selling game the struggle has been for immediate markets, not for permanent distributing fields, where the cumulative value of advertising would be great. Each district has struggles to introduce certain brands, foolishly spending money to keep out the product of other districts. No concerted effort has been made to establish Northwest box apples, the advertising funds being collected from growers in all producing districts. In Hood River, even, growers are not content to establish a single brand, thus to assure the best cumulative results in advertising, if the bigger plan of Northwest co-operation is not possible. There is not much cumulative value in selling apples in a city or section unless quality and pack are good, and the purpose is clear to occupy the field year after year. The publicity of a day is expensive, and usually it is useless.

Wrong Crop Reports Always Damaging.

Crop reports, particularly reports published near harvest time, offer opportunity for publicity, usually of the unfortnate sort. Growers who do not appreciate the value of crop reports in the larger marketing scheme, put out stories of heavy production and good quality which give an artificial stimulus to speculation and give hard traders the hook they need in their business. It would seem that in a well organized district, where growers are in close relation with each other, no trouble should be experienced with wildcat crop reports, but I think it is a fact that all Oregon fruit producers—and especially apple growers on account of the larger output of apples—have suffered and are suffering from the effects of erroneous information spread broadcast, or of facts which become garbled and tell of favorable conditions which are never realized when the fruit finally reaches market.

Stories of bumper crops are always bad in their effects. Stories of car shortage and lack of adequate storage tend to frighten growers and spur speculators to buy at low prices. Among other things which should be regulated by organization is the matter of crop reports. It would seem to be as necessary to have circulated the facts about crop conditions before packing time as it is to have honest packs sent to the market place. The good name of a district can be smirched quickly and easily by unwise and unnecessary publicity.

Editors Too Busy to Study Problem.

Perhaps daily newspapers do not fully appreciate the value of crop reports, and the necessity for great care in printing stories carelessly prepared by space writers. The day should soon come in Oregon, at least, when daily newspapers in Portland and newspapers in fruit growing districts shall realize to the full the need of having men of experience and judgment write crop and marketing stories. The work is man's size, and it cannot properly be done by school boys or young fellows who must produce in order to hold their jobs.

An erroneous idea is prevalent about newspaper advertising. It is to the effect that newspapers live on advertising, and so long as they are able to collect enough money to pay dividends there is no worry about the truth or lack of truth in the news columns. The man who invented this warped conception of the life-work of his fellows should be ashamed of himself.

Newspapers Build on Character of News.

Newspapers live on character. Newspapers live by what goes into the news and editorial columns, day by day. If the character of the news is strong advertising space will sell; if the reputation of the newspaper is saturated with weakness advertising rates will be low and advertisers few. If a sheet be operated for blackmail or character-assassination, men will pay more for silence than for the best positions in the advertising columns. The man who has the notion that newspapers nowadays are maintained by the advertisers must revise his ideas. The advertiser is more nearly built up by the newspaper. But, after all, the news columns are the barometer which tells whether profit or loss is to be shown at the end of the year.

Fruit Growing Needs Constructive Publicity.

I think I speak advisedly when I say that among all the interests in Oregon which constructive publicity can aid, the fruit growing industry neglects itself most completely. If growers or growers' well-paid agents realize the latent power in the printed word the fact is not shown in the columns of Oregon newspapers.

If the banana dealer, the raisin grower, or the pineapple canner had adopted the methods followed by Oregon fruit producers, the world would still be asking if the banana was cow feed, and if the pineapple really grew on the pine tree.

Unless growers see the need of constructive publicity and furnish high class matter for publication, who else will do it? Who else should do it? Who else can do it?

Member: We would like to hear from Prof. Cordley:

Chairman: He is here if you want to hear from him. This is a very important topic, something that I am not very familiar with. I think, however, that it is one of the most valuable papers that has been delivered before this convention and should be discussed thoroughly.

Mr. McDonald: Let us hear from Mr. Holt about canned baked apples.

Chairman: Mr. Holt is the manager of the Eugene Fruit Growers' Association.

Mr. Holt: It won't take long to tell you all I know about baked apples canned. I want to say that the canning of baked apples is Mr. Harris' idea and we are simply working it out. I put up several cans of baked apples before I got a merchantable product and I think we have got something that is good and it is no secret and I hope other canneries will take it up. We are going to scatter those samples of baked apples among all of our leaders in the community and we will send samples to all of our agents in nearly every town in the country. We have handled about 300 tons of apples, some of them have been put up that way, some as canned cider. There are thousands of tons of apples here that should be put into consumption in the form of cider and we should get our people to drink cider all the year around if it is possible. We can the cider and keep it. We are also putting out a few other things in that line. I think that baked apple is a thing to be followed up. It is a good article.

Dean Cordley: Have you ever tried putting on the market canned apple sauce?

Mr. Holt: Not as canned apple sauce. I have trouble not to get sauce when I can apples.

Dean Cordley: In our own family we can find no other variety of apple that makes so good apple sauce as the Waxen and as a result we have canned Waxen apples for several years.

Mr. Holt: Waxens are one of the best canning apples.

Chairman: There are two features in connection with the subject that we have just heard that impress me especially. I don't want to be a knocker against any other district in the country, but I was especially impressed with what was said regarding the National apple show at Spokane. The reason I am impressed with that is this. The year after they began the promotion of a National Apple Show at Spokane, at the Oregon State Horticultural Society meeting at Portland, I was talking on the subject of exhibits of our own fruits of this state and in connection with that I alluded to the National Apple Show at Spokane. I said I thought it was becoming for every state to exhibit the fruits of her own state. I did not regard the Spokane apple show as a National apple show. I thought it was limited and did not have the support it should have as a National apple show. I did not think the other states participated sufficiently in the exhibits there to entitle it to be called a National show. I was taken to task, because what I said fell into the newspapers. They almost made me feel little about it and so I have noticed the National Apple Show ever since. I have had fruit there and with others of our valley helped to take prizes, but I do agree with Mr. Harris as to that not being a National apple show. Now I admire the enterprise of Washington State. As a rule the Washington people have surpassed Oregon in their enterprising nature. They have drawn capital and they have drawn people to that state more than Oregon has, not that they have better advantages and facilities but they advertise better, but I do think with Mr. Harris that that is improperly named National Apple Show. I don't want to go on record as saying anything detrimental to that district. The Spokane people are enterprizing people and I think there are things that they do that are worthy of our imitation. That is one of the features I spoke of. The other is the advertising regarding conditions here in Hood River. I have some sympathy with the reporters of these various articles that have been published. I know the spirit of the originator of those articles. It is one of honest effort. While it might have been a fact Mr. Harris thinks it was bad publicity, but I want to say that there was an honest e fort on the part of that correspondent to give facts. With many other fruit growers I have criticized the conditions that we have had, especially in regard to the facilities for shipping our fruit and I say that only in defense of the correspondent of the Oregonian. While it may not have been best to say that, it isn't best for us to speak about our bad roads and we do criticize most severely sometimes the men who are at the head of our roads.

Mr. Hoyt: I want to tell a story. Over a year ago when I was East a friend of mine had some apples he wanted to sell, was having trouble in disposing of them. He told me the experience he had in one of the restaurants. He went in one morning and asked for baked apples. They picked up an apple and poured a little cream on it and handed it to him. He asked the proprietor how many apples he sold a day. "About a half a dozen," he told him. "I have some that I want to sell you but I want to come up and fix them for you," my friend told him. He took good red apples and scored them around the center and baked them. Then he lifted up the top half of the skin and showed the white flesh. He served them on a white plate and a little whipped cream on the top. Inside of a week they were selling 200 a day in that same restaurant. They had them out where people could see them, sometimes in the window, sometimes only one but it was enough. They increased their consumption in that restaurant in a week from about five a day to 200 a day.

MANUFACTURE OF FRUIT PRODUCTS IN OREGON.

By Robert Paulus, Manager of Salem Fruit Union.

The subject "By-Products," so called, is one that has been receiving a great deal of attention in the Northwest of late on account of coming over-productions of various fruits, and also on account of the fact that with the enormous increase in fruit production a much larger percentage of lower grade fruit finds itself without an outlet in the shipping market, making it necessary to find local methods of disposing of these lower grades to keep them from spoiling. This is particularly true of apples. The grower picks his crop, sorts, grades and packs it, and after taking out his better merchantable apples he finds himself in possession of a quantity of fruit sometimes large, sometimes small, depending on the season and other conditions, on which he has already incurred all the expense of growing and harvesting, and on which it behooves him to try to realize this cost.

The term "By-Products" with relation to the fruit industry is a term very much misused and very much out of place, especially in the way it concerns almost every other fruit grown in the Northwest, except apples and pears. We of the Willamette Valley object very strenuously to this name and figure that the coupling of the name "By-Products" to the canning and packing of fresh and dried fruits is likely to do a great deal of injury to this branch of the fruit business. We maintain that the proper term to use in this connection is "Fruit Products." The term "By-Products" when associated with the manufactures of the East is usually connected with the refuse left over from the operation of manufacturing a product, such as the case of the hoofs, horns, etc., of the meat packing houses, the products made from the left-overs of the oil business, etc. Applied to the fruit business it should relate to the utilization of the pealings, and cores of an apple drying plant, or an apple canning factory, to the stems of the cherries from fruit canneries and the stems and seeds of cherries from an evaporator; the stones of peaches and apricots in canning and evaporating. In the loganberry juice business it would pertain to the seeds and pulp which is left after squeezing out the juice, and we might carry this on further into the manufacture of all fruit products. To some it may seem queer to speak of the utilization of cherry seeds and stems, but this is actually done; these by-products being carefully dried and shipped to Europe where they are used for making prussic acid, flavoring extracts, etc. In California large quantities of peach and apricot kernels are exported to Europe for this purpose. Peelings and cores of apples are also evaporated and the pectin extracted and used by Eastern jelly manufacturers as a base for a number of jellies.

In the loganberry juice business pectin may be extracted from the pulp and the seeds furnish a very fine oil which will saponify beautifully, and while they are not as yet being utilized, it is only a question of time until a very fine soap, a perfume base and many other things will likely be made from these seeds, which are apparently worthless.

To get back to the fruit product business in its true sense, we defend the use of the above term in the fact that in all of the fruit packing plants in the Northwest, speaking particularly of canneries, evaporators, dried fruit packing plants, loganberry juice plants and plants conducted for the manufacture of unfermented apple juice, only sound fruit, and usually the best fruit we have, is used.

Our canneries use only first class fruits. Our evaporators cannot afford to use fruits unfit to make a product which will compete with Eastern or foreign goods. Our loganberry juice factories demand and can use only first class sound fruit.

From this standpoint you can readily see our position in regard to the attitude we have taken in calling the out-put of canneries, evaporators, dried fruit packing plants, juice factories, etc., "Fruit Products" and not "By-Products," and we believe there should be a concerted action on the part of the fruit interests of the Northwest and the agricultural colleges of these states to gradually eradicate this term from our fruit vocabularies.

There is one exception to the above, and that is vinegar, for vinegar, while it is in its fullest sense a fruit product, is sometimes in the class of a by-product. In the old days I have seen apples go into vinegar which even a half starved hog would sniff at, and which were wholly unfit for the purpose, and which would not make a product fit for human consumption, but times have changed and more care is being taken even in the manufacture of vinegar.

In our dried fruit department I have instructed our growers not to evaporate anything which in their judgment is unfit in the fresh state for human food; in fact, they have been instructed not to evaporate anything they would not eat themselves. The fruit growers of the Willamette Valley have taken a great deal of interest in this matter the past four or five years, and the improvement in the pack of evaporated fruits of the Northwest has been remarkable.

I will now give you a few details of the Fruit Products Business.

Taking up the evaporated prune business first we will begin with the prunes in the orchard. Picking of prunes usually commences about the 1st to the 15th of September. The prunes are allowed to ripen on the trees and fall off on the ground. In some seasons when the weather is cool and moist the prunes do not have a tendency to fall easily and it is necessary to assist nature by shaking the trees. The prunes are then picked from the ground by pickers and put into boxes. Most growers use a box holding half a bushel and one which is built with slatted sides to allow for ventilation. The fruit is then hauled to the evaporator, which is usually owned by the grower himself. It is next put through an operation known as "dipping" in which the fresh prunes are cleansed of the dirt which they have accumulated while on the ground. They are then placed on screen wire trays and placed into the dryer to dry. There are several types of dryers in use in the Willamette Valley, those being most used being known as the tunnel and stack type. In the tunnel dryers the tray of fresh fruit is placed on runways which have a slope toward the back end of the dryer, which is the heat intake end. It has been found advisable not to have too much pitch in the slope on account of the fact that the angle created causes the fruit to roll to the lower side of the tray, sometimes piling the prunes on top of each other, or causing spilling of the fruit when the trays are moved. The prunes remain in these tunnels from twenty-four to thirty-six hours.

As fast as the prunes are sufficiently dried they are taken out of the other end of the evaporator and more prunes put in at the front end to take their places. They are immediately sacked in 100-pounds manila sacks and as soon as possible taken to the Association packing house. Here the grower is given a receipt for the net weight of his prunes and they are run over a grader which sorts out the prunes according to size, and as the large prunes are worth more than the small ones each grower is given credit for his fruit as it actually grades when final settlement is made. From the grader the prunes are then put in bins for each size, where they remain until they are packed.

The prunes are next put through the operation known as "processing" before being packed, and they go into the boxes hot. Where prunes are sold unfaced they are practically never touched by human hands after being put into the processor, until they are opened in the East by the retailer. Where prunes are sold faced it is necessary for two layers of prunes to be put into the bottom of the boxes, flattened and placed in regular rows, after which more prunes are packed on top of this facing and after the bottom is nailed on the box is turned over and when opened is opened on the faced side, making a beautifully arranged display of faced prunes.

About half to two-thirds of the prunes this year were sold faced. This part of the operations of the Salem Fruit Union's plant alone necessitated the employment this fall of from 100 to 125 women for a period of about two months. The total pack through their Salem warehouse this year will amount to about two and one-half million pounds in addition to which they handled about one and one quarter million pounds in other parts of the Willamette Valley.

Going back to the processing operation, this is done by putting the prunes through a long box or barrel shaped machine, and turning live dry steam on them. In this machine there are boiling water sprays which clean the prunes so well that it is impossible to get your hands soiled in handling them when they come out of the processor. This operation requires a great deal of care in order not to get too much moisture into the prunes; otherwise, they will not keep. The main idea is to get enough heat into the prune to thoroughly sterilize it, and just as little moisture into the fruit as is possible to do so. The gain in weight, due to processing, the past two years has been only about 1¾ to 2 per cent.

The prunes are packed in ten, twenty-five and fifty-pound wooden boxes, lined with nice clean white water-proof paper. Forty thousand pounds, gross weight, has been the minimum car up to this season, but the minimum has been raised to 60,000 pounds gross weight this year.

Taking up the loganberry juice business next, we will start with the berry in the loganberry yard, or vineyard as it is sometimes called. The berries are allowed to get full ripe before picking, and as they are very perishable they are not allowed to stand long but are rushed to the juice factory as soon as possible. The season for picking commences about the 20th of June to the 1st of July. They are picked in berry hallocks holding approximately one pound each, twenty-four hallocks to a crate, which is built single decked in order that by putting a screen over the top of the crate the entire crate of berries may be dumped at one operation, saving handling of each hallock separately. The berries are then crushed and run into the press cloths and pressed. The juice is sterilized and put into storage. Later, as fast as sold, it is bottled, labeled, cased and shipped out to the trade. The manufacture of loganberry juice is a very delicate operation, and requires extreme care and cleanliness.

The canning of fruits is a business which requires a great deal of experience, and the details of this business are so intricate that a short delay or small oversight can do a great deal of damage.

Fruit is usually put up in what is known as No. 2, No. 2½, No. 3, and No. 10 cans, and the grade is known as Special Extra, Extra, Extra Standard, Standard, Seconds, Water and Pie grades, according to the degree of syrup and quality of fruit put in the cans.

After the preliminary operation of stemming, peeling, coreing, or other operation which it may be necessary for the fruit to go through, the fruit is then washed thoroughly and the proper quantity of fruit for the size can to be canned is weighed into the can. The cans are then placed on an endless chain which carries them to the syruper where the proper degree of syrup is turned on and the cans are filled. From here the fruit is automatically carried to the exhauster where live dry steam is turned on. There the fruit is thoroughly heated and the surplus air is driven out of the can from which machine the fruit is carried to the capping machine, where the lid is crimped onto the can and sealed air tight. From this machine they are carried through the cooker, and the fruit is cooked the proper length of time in the sealed can. From the cooker it is automatically carried to the cooling tanks, where, after a short immersion, it is taken out to the cooling room and stacked, where it is left until it is to be cased up, at which time it is looked over carefully, and what are known as the "swells" are taken out.

A swell is a can of fruit which, through imperfect sealing or improper cooking, was not sufficiently sterilized to keep, and when fermentation begins gases will form which press the lids of the can out, giving it a swelled appearance; hence, the name "swells."

As soon as the goods are tested for swells and cased they are ready for shipment. Forty thousand pounds constitute a minimum car.

It is not generally known to the public, but is recognized by the canners, that the fruit produced in the Willamette Valley, Oregon, is of a very superior quality for this purpose. This is not alone due to the fact that, on account of the particularly favorable climate, small fruits and berries grow to perfection in the Willamette Valley, but also on account of the greater intensity of the flavors in fruits grown there.

From the fruit products standpoint the Willamette Valley has a very bright outlook for the future.

Taking up the making of cider vinegar, the apples are ground and crushed and the juice pressed from them, the juice then being run into storage tanks for what is known as the alcoholic fermentation. After this is complete, which requires from sixty to ninety days, according to the temperature, the generating process is taken up. This consists of running the fermented cider through the generators or generating tanks, which are usually five feet in diameter and fourteen feet high, and are constructed with a false top and a false bottom filled with holes through which the vinegar seeps. The spaces between these false bottoms and tops are filled with curled beat shavings over which the vinegar runs, the purpose of these shavings and the false bottom being to expose the vinegar stock to the oxygen in the air, in which process the alcohol in the cider is converted into natural acetic acid. In Oregon the state law requires a 4 per cent acetic acid test. This is sometimes known as 40 grain vinegar. In Washington the law requires a 4½ per cent standard, or a 45 grain vinegar.

Vinegar is sold on the percentage of acetic acid test, which is denoted as 40 grain for 4 per cent acetic acid, 45 grain for 4½ per cent acetic acid, 50 grain for 5 per cent acetic acid.

After the vinegar has been put through the proper processes it is either bottled or put into barrels, according to the requirements of the trade, and shipped to the wholesale houses, who in turn ship it to the retailers as fast as required.

The idea of a good vinegar maker is to produce vinegar that is a beautiful transparent yellow color, which will not precipitate a heavy sediment or cloud up in the bottle.

By way of summary, there are eighteen dried fruit packing plants in Oregon and Clark County, Washington, and they handled the past year about 40,000,000 pounds of evaporated prunes, 750,000 pounds evaporated loganberries and a considerable quantity of other evaporated fruits and vegetables. I would judge that there are invested in these plants and their equipment $275,000, and the total cash brought into the state of Oregon and Clark County, Washington, by them this year amounted to approximately $3,250,000.

There are sixteen canneries operating in Oregon and Clark County, Washington, and their total pack was approximately 425,000 cases valued at approximately $1,250,000. Total capital invested in canning plants and equipment is a little out of my line, but I presume would not be less than $300,000.

I have included Clark County, Washington, as it bounds Oregon on the north and is isolated from the rest of the state of Washington and a great proportion of the fruit business done there is carried on by Oregon packers.

During the past year the loganberry juice industry has made big strides and there are now thirteen loganberry juice factories which manufactured about 500,000 gallons juice and paid the growers about $200,000. Total capital invested in plants, machinery and equipment is approximately $250,000.

The total crop of loganberries in the state this year was approximately 5000 tons fresh berries, about 70 per cent of which was made into juice.

There is at least one unfermented apple juice factory in the state, which put up quite a large quantity of unfermented apple juice. I understand their Olympia, Washington, plant used five or six thousand tons of cull apples this season.

There are at least ten vinegar plants in the state, although there may be a few more with which I am not acquainted. I am not familiar with the details of this business, so cannot give any information as to output, money distributed, or capital invested.

Chairman: If there is nothing further on this subject we will hear from Dean Cordley regarding the college.

Dean Cordley talked to the Society of the college.

THE RELATION OF THE EXPERIMENT STATION TO THE HORTICULTURAL INTERESTS OF OREGON.

By A. B. Cordley, Dean, School of Agriculture O. A. C. and Director Oregon Experiment Station

Mr. Chairman and Gentlemen:

I have very much enjoyed this meeting of the Oregon State Horticultural Society not only because of the interesting character of the discussions, but also because it has enabled me to renew old associations, I also appreciate very much the opportunity which has been extended to me by the chairman of speaking to you a few moments regarding the Oregon Agricultural College and its work. The chairman should not have extended this privilege to me so shortly before the coming meeting of the legislature unless he were willing that I should call your attention to some of the needs of the College and the Experiment Station, since that is uppermost in my mind at this time.

Doubtless there are many of you who feel as I do, that an educational institution should not be compelled to rely upon the uncertainties of biennial appropriations by the legislature for its support. As a matter of fact, we at the Agricultural College believed four years ago that we had reached the stage where such action would no longer be necessary. Two years previously the Experiment Station work had been placed, as we thought, upon a permanent basis by continuing appropriations for crop pests and horticultural and for general scientific investigations. At the 1913 session of the legislature the extension work was likewise provided for by continuing appropriations and a millage tax law was passed which provided for the resident instructional work at the State University, the Oregon Agricultural College and the State Normal. While it was realized that the rapid growth of the institution would make necessary the utmost economy in the expenditure of all available funds it was felt that a definite knowledge of our resources would enable us to so plan the work of the institution for the future as to obtain maximum results.

At the time the millage tax law was passed the tax commission estimated that when it should go into effect in 1915 the assessed valuation of the state would be approximately one billion dollars and that it would increase at approximately 5 per cent annually. Instead of increasing, however, the assessed valuation of the state has continued to decrease with the result that the total revenue for resident instructional work for the years included in the biennium just closing and the two years to come will be about $370,000 less than was estimated when the law was passed. Moreover, at the last session of the legislature a law was introduced and passed which repealed all continuing and standing appropriations with certain exceptions. This law repealed the appropriations for the Experiment Station which had been passed four years previously at the request of the fruit growers and farmers of the state and leaves the Experiment Station at Corvallis without any state appropriations whatever for its support. Unless the coming legislature comes to our relief, therefore, the total income for the institution for the four years mentioned will be $470,000 less than was expected.

I appreciate, Mr. Chairman, what you and others have said regarding the great value of the work done by the Experiment Station. I doubt, however, whether there are many who fully realize the important relation which this work bears to the agricultural and horticultural interests of the state. Doubtless the fact that the Experiment Station at Corvallis has been without state support during the past two years and unless the legislature comes to its relief will continue without such support in the future, appears to many to be of but little importance to any one but the members of the Experiment Station staff.

Is this a correct view? At the present time, progress in every industry, is built upon the results of scientific investigation. Large corporations maintain a corps of experts paid to investigate and upon the results of their investigations great fortunes are built. In agriculture and horticulture, upon which the prosperity of all depends, the producing units are comparatively small. It is impracticable for each individual producer to employ experts, but the state through its Experiment Station employs them and makes the results of their investigations available to all.

The Experiment Station, in other words, does for the farmers and fruit growers what its corps of experts does for "big business," and when the work stops, it is the farmers and fruit growers, and through them the state, who lose.

Several years ago the prune growers in the state were interested in developing a better market. It was decided in conference, that one of the most important steps would be to produce a better and a standard product, but each producer had his own standard. Before the thousands of growers and the hundreds of evaporators could be brought to produce the desired standard product, it became necessary to determine what the standard should be and how it could be produced. The Experiment Station was requested to make the necessary investigations, and report. An assistant was employed, who devoted the better part of three seasons to the work, and was getting most interesting and valuable results. The appropriations for the Experiment Station work were repealed. This assistant with eight others was necessarily dropped from the staff. He immediately went to a position in an adjoining state at a material increase in salary, and with him went necessarily much of the knowledge and experience which had been accumulated in three years at the expense of the state. Who lost?

The Experiment Station is a pioneer in new fields. It is a prospector searching for facts. It is a reconnaisant engineer, pushing his lines into the unknown. Its constant endeavor is to discover new facts of value to agriculture. The results of such work, however, are necessarily uncertain. A prospect may not develop into a mine, but a single investigation may be worth more to the state each year than the total cost of the Experiment Station from the date of its organization.

Has the Oregon Experiment Station made good? Has it discovered anything of value to the state? Presumably a majority of our farmers are of the opinion that it has been of no particular benefit to them individually. Nevertheless practically all of them, some more than others, are constantly following methods that were first discovered and demonstrated by the Experiment Station.

There is not sufficient time to discuss any considerable portion of the results already attained, but with your permission I will briefly refer to some of our work which is of particular value to orchardists.

In the late ninety's it was freely predicted by our leading horticultural authorities that the apple industry of the state was in serious danger of destruction from the ravages of a bark disease, or canker, the cause and prevention of which was unknown. The Experiment Station made an exhaustive study of this disease, discovered its cause, found also that it was the unsuspected cause of a serious apple rot which often developed in storage, and developed a method of controlling it, which is now used by every progressive grower when necessary.

The disease is no longer feared. Professor Jackson, following a very careful study of the disease, estimated conservatively, as he believed, that spraying methods against anthracnose introduced by the Experiment Station, result in an annual saving of something more than $150,000 to the orchardists of the state. This annual saving is considerably in excess of the total amount the state has appropriated for the support of the entire Experiment Station at Corvallis from the date of its organization.

The apple crop estimated to be worth two and a half to three million dollars annually, and the most important fruit crop of the state, depends for its profit on the production of the highest possible percentage of perfect fruit. Apple scab is the most serious obstacle to apple production in Oregon. In 1895, Headrick stated that nine-tenths of the apple crop of that year was unmarketable because of scab. As a result of a long series of experiments conducted in various parts of the state, the Experiment Station has developed a method of spraying for this disease which has enabled many growers who have followed our directions carefully to produce from 90 per cent to 95 per cent of their fruit free from scab blemish. In one of the famous apple growing sections of the state, in which the loss from scab was estimated last year to have totaled $250,000 to $400,000; the loss this year has been very greatly reduced by the growers following our directions. The annual saving to the state from the results of this experiment is also more than the total amount which has been appropriated by the state for the support of the Experiment Station at Corvallis.

I might go into details regarding the value of our investigations on pruning; on the pollination of sweet cherries, which promises to be of immense value to one of the cherry sections of the state; on loganberry by-products; on nitrate of soda as a fertilizer; on fire blight of the pear and apple; and numerous other investigations of value to orchardists, but sufficient has been said to demonstrate the great value of a single investigation. Many other investigations have been conducted, the results of which are equally valuable to other branches of agriculture, but there is no time, and this is not the place to discuss them.

I am here not to ask that this society urge upon the legislature the necessity of granting support to the Experiment Station. I am here merely to give you the facts. You know whether or not the work has been of value to you, and whether or not you wish to have it supported.

Chairman: We have nearly an hour yet. If there is anything to be said in addition to what Dean Cordley has said we would like to hear it now. If not, there are two subjects that have been presented, that seems to be rather vital ones to us, and one is the subject of blight. Woolly aphis was spoken of in connection with carrying the microbes down to the roots of the trees. In my mind, of all the insects that work in the orchard that is the most injurious; it is the most insidious. It works so secretly and once in your orchard it will ever be in that orchard and it is so hard to get at it. Its effects on trees are bad. It has an especially injurious effect on the fruit. I wish we could have a little something as to what they are doing at the experimental station in regard to that special work. There has been so much said by Mr. Childs and Dean Cordley as to the effect of sulphur upon these aphis and it seems to me with what was said by Mr. Frazier, that it might be worth our consideration. If that material can be applied to the tree, and as was said in so short a time it is truly wonderful. It was asked how that adheres to the foliage, to the body of the tree. He cited the fact that dust falling on the tree will stay there even after a rain. We who live along a highway where they have been stirring up dust all summer can understand that. He says that sulphur will land there and stay there. If any of these professors or these young men who are experimenting with it will just give us a little time, I would like to hear them. I wish we had more time.

Dean Cordley: I wish simply to refer to the work that is being done in Southern Oregon of which Mr. Allen spoke. The entomologist of which he spoke is one of our own graduates who is working in co-operation with Prof. Lovett. A very exhaustive outline has been prepared. I think it probably is one of the most exhaustive subjects that has ever been touched and I judge that they feel they are on the right track. However, I don't feel that the results have gone far enough yet to justify any definite statement regarding the work other than that it seems to be demonstrated that sulphur around the roots of the trees is beneficial and that being true it makes it very distasteful for insects to live in that environment.

Mr. Shepard: Before it is too late I wish to say I believe there is no district in the state of Oregon that realizes more fully the value of the work at the experiment station than Hood River. I think there is no body of men that has been so aggressive, therefore I want to make this motion, that the chairman appoint a committee, and I would suggest that the committee include the president, secretary and Dr. Macrum, although I am not particular about the number, first that this Society endorses fully the valuable work that has been done by the experimental station and the Oregon Agricultural College and that this Society and convention assembled here in Hood River instruct a committee to have these sentiments expressed in a written letter or printed statement and that the secretary be instructed to send a copy of that to each member of the legislature at Salem before the next session goes into action. My object of having a committee appointed is this: That they will be able to frame up the right kind of a letter and circular which would cover a recommendation and put more force in it than we would have in passing a resolution.

Chairman: It is moved that a committee be appointed. This committee is to prepare a letter regarding our sentiments as to the importance and value to the industries of this state, agricultural and horticultural, of the Oregon Agricultural College. That is the sentiment.

Mr. Shepard: And that the Experiment Station be given such funds as were reasonably necessary to conduct their work and that they be given a continuous fund instead of just sometime-you-get-it-and-sometimes-you-don't. The committee would have full power to write the right kind of a letter which I believe would do some good.

Dr. Macrum: I would like to say a word. I certainly appreciate that my dear old friend Shepard wants me to work. I have a lot to do, but if it is possible to do anything to help the Agricultural College and the Experiment Station I am willing to do it. They have published this year two bulletins that are worth every cent of taxes we have ever put in them and that is pruning and the report of the Experiment Station here. They are worth more than all the dollars we have put into it.

Chairman: I would like to see added to that committee Mr. Shepard did I not know one thing. He is doing the work of two men. I have had all I could do with my son as foreman, on my place. Mr. Shepard has as large an orchard as mine, or larger, besides his other work and responsibilities that fall on him, so I will not suggest that he be placed on that commitee. Dr. Macrum says he is busy, but I will say the busy man as a rule is the man who does things.

Dean Cordley: There is one thing that I omitted to say that I should like to add. I think that as fruit growers you appreciate the work that is being done by such men as Gardner, Bouquet, and Magness and I want to say that inside of two years we are likely to lose every one of those men if we don't get help. They have all had offers in other institutions averaging 25 per cent more and they have simply stayed through faith in the state of Oregon and the college. No man can afford to simply live on faith for a state which does not respond.

Chairman: I know they are ready to pick up these young men in other institutions.

Dean Cordley: Mr. Magness not over two weeks ago was offered a salary 50 per cent higher than he is getting with us.

Mr. Shepard: Mr. Harris has given us an insight, it seems to me, which would be within the power of the committee, it would be wise for that committee to secure a copy of the remarks of Dean Cordley so they will have the facts to go by. Send them to the Oregonian, Journal, and Telegram and it might be a wise idea in addition to send a copy impressing the main facts of Dean Cordley's talk here. Let's get some pressure to bear. If you are going to do something you want to go ahead. If you expect to accomplish something in this legislature a great many people will have to been seen or reached in a short space of time. You can reach them through the press or by letter, but you can reach them all by letter. And after this committee meets in Portland and prepares this statement, backed up by the statement that Dean Cordley made and that the work should be continued, let them call on the editors of the three principal publications in Portland. If I was a young man like Dr. Macrum I would be only too glad to serve on that committee.

Chairman: Before we put this motion I am sure we would have the counsel and advice of Mr. Shepard. We may not throw upon him the responsibility of writing this letter but we can submit it to him. I would like to add to that committee Mr. Frank Cutler, who is a young man with ability to do things. I will suggest him at any rate.

The motion was put before the Society and carried.

Chairman: The committee consists of the new president, Mr. Paulus, Mr. Minton the secretary, Dr. Macrum the commissioner of this district, and Mr. Frank Cutler.

Mr. Childs spoke briefly of "Woolly Aphis."

WOOLLY APHIS.

By Prof. Childs.

I told Dean Cordley last year that the inspection I considered the most difficult to handle would be the woolly aphis. He told me that they had been working on woolly aphis, he being an entomologist, for forty years. I really think that the woolly aphis is the most serious insect pest that we have to contend with. I have outlined as times permitted and carried out experimental work in the control of woolly aphis. Up to the present time it has not been very extensive because I have had to handle so much work, and scab being our most important pest, I have devoted most of my time to that. I have tried out in the past two years, spraying and fall applications of oil. I think I can say positively that applications at that time are not effective for the control of this insect. They are effective only in that they destroy to a more or less extent the infection that winters on the trees. The young aphis in the fall migrate down to the trunk and larger limbs and hibernate in hundreds of thousands if the tree is badly infected. If you will take an apple tree whose bark is rough, and is badly infected with woolly aphis, you will find under each scale 200 to 300 of these aphis. The spray washes down the tree and is carried right on past leaving the young aphis underneath. If you drive your spray to the trunks you will get a good many, but at the same time a good many are protected from the spray. Our severe winters here kill 95 per cent of them and it is the 5 per cent that are protected from the weather that are most protected from the spray. What does it mean? It means that we have got to handle woolly aphis in the summer time. And I have the disagreeable task of recommending a spray beginning along about the first of June, along the first of the summer. We can control it, probably with black leaf forty or any form of fish oil soap or laundry soap is all right. The orchardist can't spray all the time. About that time he has to attend to irrigation; he has to cut his first crop of hay; he has to thin; about a half dozen other things he ought to be doing right at that time, that he has to neglect to handle the scab up to this time. The only hope to control it is to spray in the summer time. It will take a year or two or three to work out a means that will be thoroughly effective. The woolly aphis in Hood River has increased terribly in the last two years. When I first came to Hood River it was not very plentiful, now it is practically over the entire orchard and is becoming worse each year. Fortunately we have several parasites that help us largely in keeping woolly aphis down. If it wasn't for these we would be much worse off than we are. As I said before, I think that the only way we can possibly control it is to spray in the summer time. The point was also brought up about the effect of sulphur on insect life. I have been carrying on a series of experiments with dust. The data is not all complete at the present time and for that reason I haven't made any statements. I will say, however, that I have obtained splendid results with the dusting method. I have given it very careful personal attention. For the reason that I have only used it one year I won't give out any recommendations. The dust is an auxiliary to our present spray practice. As Mr. Frazier has brought out, we can get out and put on an application between showers. Because the outfit is light we can get in even when it is muddy. No disagreeable burn accompanies its application. In the control of scab I held scab down to four and a fraction. I dare say that is a lot better than a good many orchardists did with their liquid. My check trees ran about 70 per cent scab. Lime-sulphur solution produced 3 and a fraction per cent scab infection, together with 5 per cent or 6 per cent burn. The dust application was more effective. In connection with this dust I found, or apparently observed, that there is some beneficial results in the control of soft bodied insects. Experimenters have found that sulphur is effective when they are young. Putting on several applications of dust during a period in which the insect is young, affords chances that you will kill off a good many. Dust stops up the pores of insects. They breathe through a series of pores along the side of the body. That is why the hen gets in the ash bin to rid herself of lice. For this reason I can see that there are possibilities in the control of insect pests by the use of the dusting system. If you could perfect a system of this sort for control of woolly aphis it would be a godsend, because it is difficult to spray effectively.

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